TECHNOLOGY DEPT.

Gas Journal

VOL. 275. 105TH YEAR. LONDON, AUGUST 5, 1953. NO. 4705. PRICE 1/3

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DETROIT

EXHIBITION OF THE WORKS OF INDUSTRY OF ALL NATIONS 1851

I hereby certify that Her Majesty's Commissioners upon the Award of the Jurors have presented a Prize Medal to

T. Glover

for a Gas Meter

shewn in the Exhibition

Exhibition
Hyde Park London 15th Oct.r 1851

Albert
President of the Royal Commission

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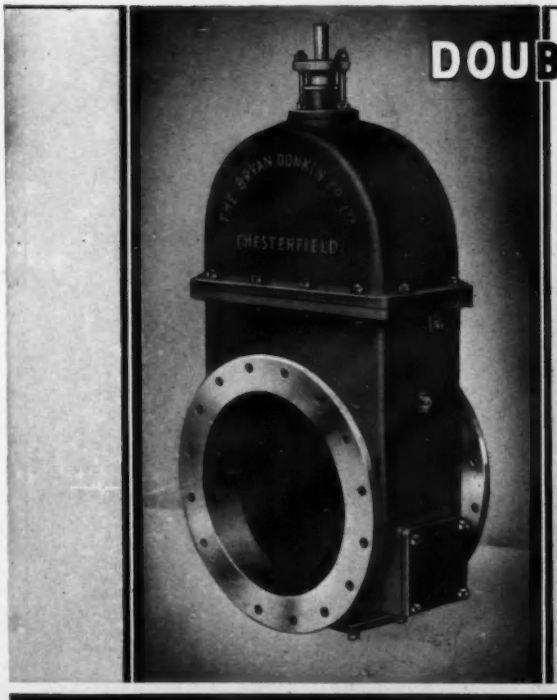

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"HICKS" TYPE WITH INTERNAL SCREW

UP TO 24" - 10 lbs. per sq. in.
OVER 24" - 5 lbs. per sq. in.

THIS VALVE has the following special advantages:—

Access to all working parts for cleaning while valve is under pressure.
The valve is of the parallel slide type and cannot jam.
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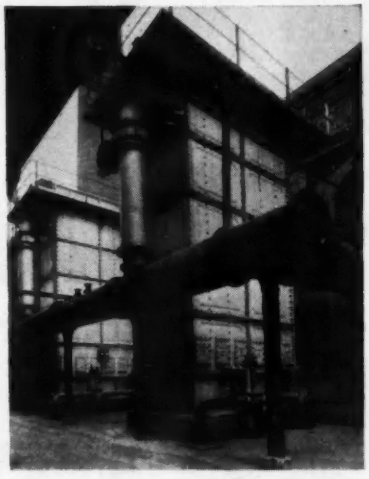

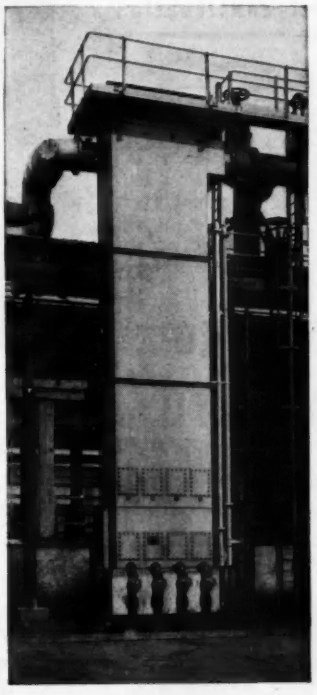

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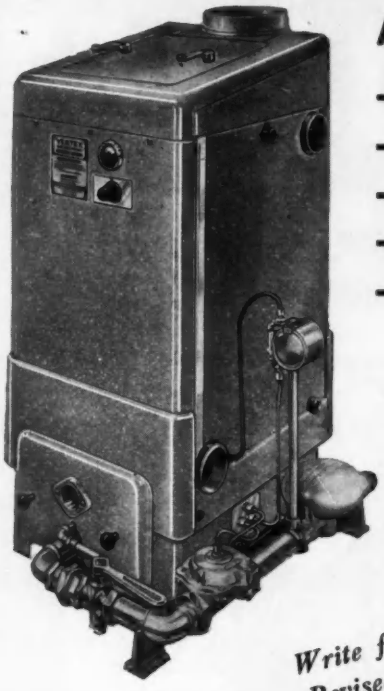

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No. 1	80,000	3' 1"	2' 6"	1' 10"
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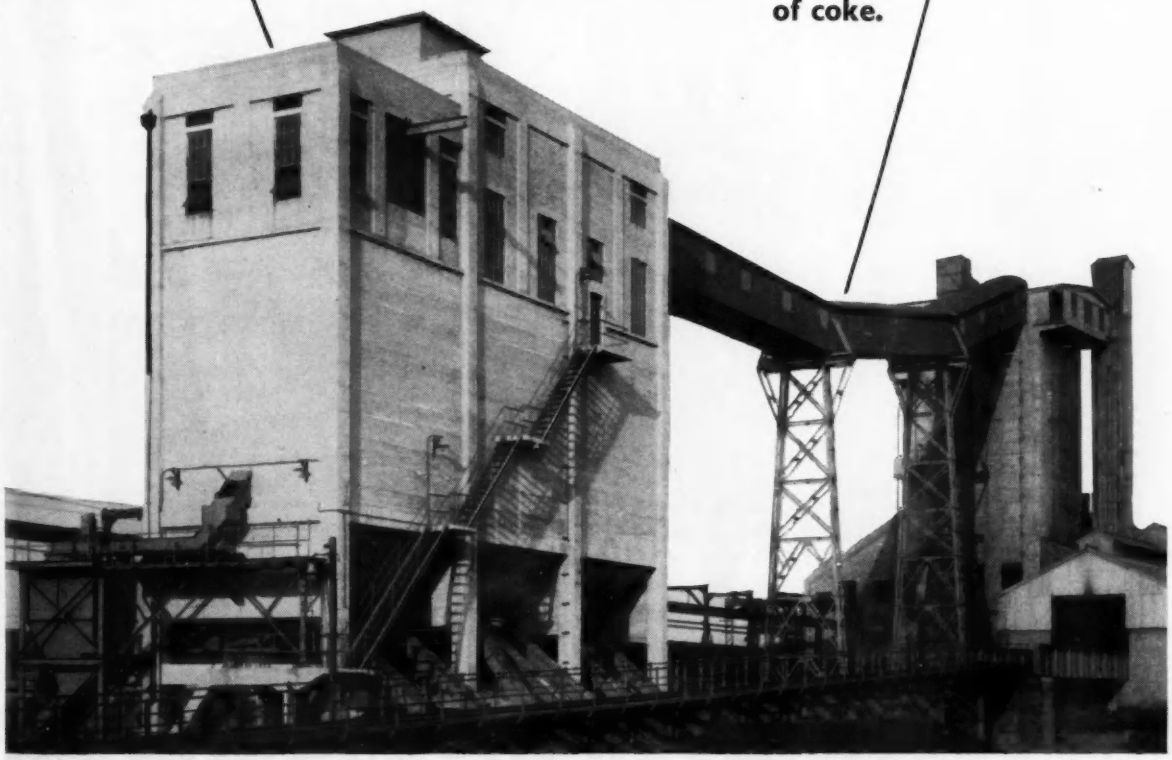
This new plant, erected at Aldershot Gas Works in 1952, reveals not only in its conception but in its smallest detail the knowledge and experience of the specialist, who alone fully appreciates the problems peculiar to the grading, storing and handling of coke.



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THIS YEAR

cannon A125

are making a real effort

TO MAINTAIN CONSUMER INTEREST DURING THE SUMMER MONTHS

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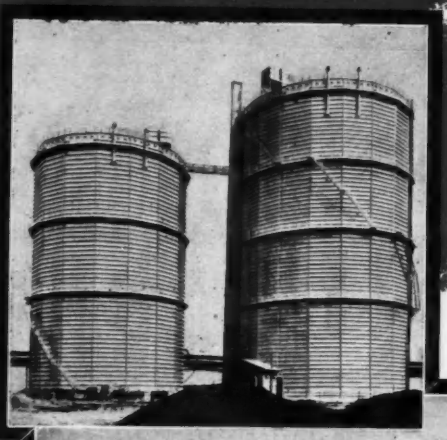
Gasholders in Many Lands



ONE OF CLAYTONS' OVERSEAS CONTRACTS

TWO M.A.N. WATERLESS GAS HOLDERS RECENTLY COMPLETED IN SOUTH AFRICA

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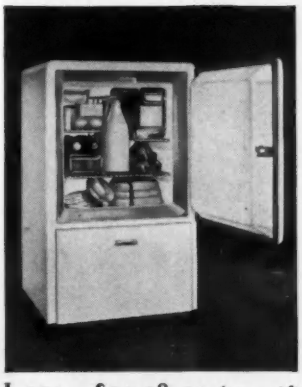
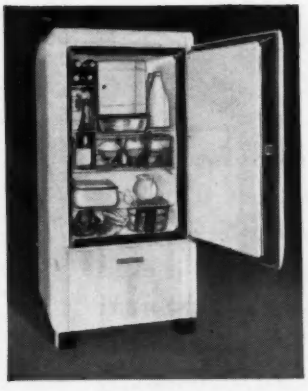
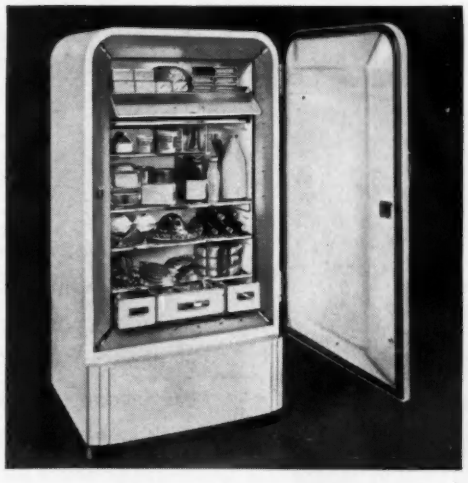


L.150 £54.18.10 (*tax paid*)
Free standing cabinet of modern design. Internal volume: 1½ cubic feet. Shelf area: 3½ square feet.

L.H.150 £57.17.4 (*tax paid*)
A new model with table top and drawer. Internal volume: 1½ cubic feet. Shelf area: 3½ square feet.



L.450 £108.16.11 (*tax paid*)
An 'extra' size refrigerator with four removable shelves. Internal volume: 4.6 cubic feet. Shelf area: 8.4 square feet.



L.700 £143.5.10 (*tax paid*)
A handsome cabinet for all installations where generous capacity is required. Internal volume: 7 cubic feet. Shelf area: 12½ square feet.

L.300 £82.6.5 (*tax paid*)
Family size refrigerator. Internal volume: 3 cubic feet. Shelf area: 5.8 square feet.

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Electrolux *Excels* in proved reliability

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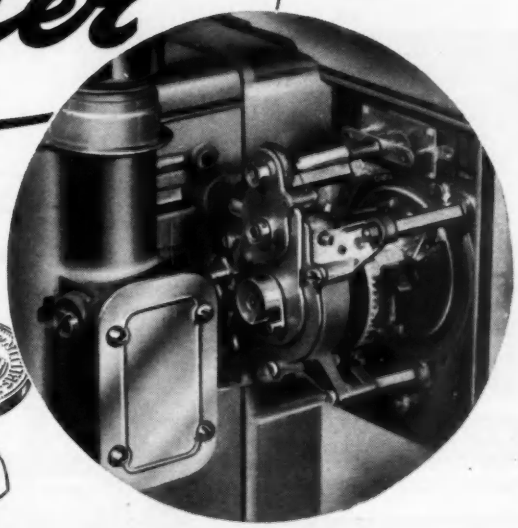
Flomaster

looks after your money



The pre-payment attachment on the Flomaster makes the theft of gas or money impossible without leaving clear evidence of wilful damage. Yet it offers easy access to collectors. Like the meter itself, the attachment is made from precision pressure die castings, ensuring very accurate operation. The mechanism is easily adjusted for variations in the price of gas. The outer case is rugged but neat. In short, the pre-payment attachment keeps up the all-round high standard attained by the Flomaster meter.

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BM24

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SINGLE BEAT STOP VALVE

The standard valve is provided with ¼", ⅜" or ½" B.S.P.T. Connections and 3/32" orifice (5/32" seat diameter) to operate on pressures up to 100 lbs. per square inch. An increased size orifice can be arranged dependent upon the pressure to be controlled. This valve is suitable for controlling water, air, oil, gas, refrigerants, etc., and is adaptable to either straight or angle pattern.

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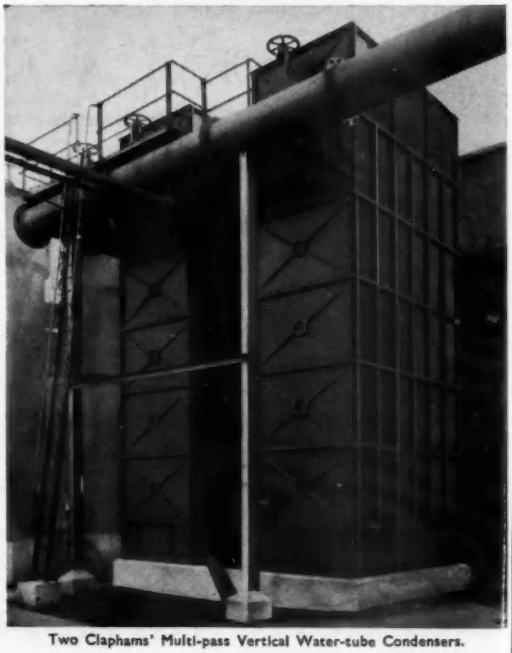
Two Clapham-Barwick Pumpless Static Ammonia Washers.

Internal deck Level view of the Purifier Installation. (Eight 45 Feet Square Boxes.)



Two Claphams' Multi-pass Vertical Water-tube Condensers.

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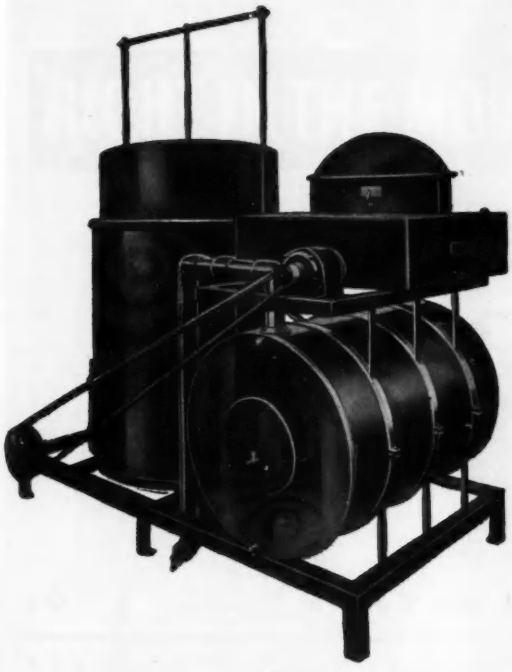

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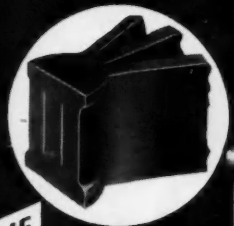

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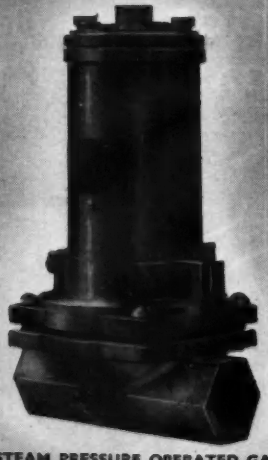
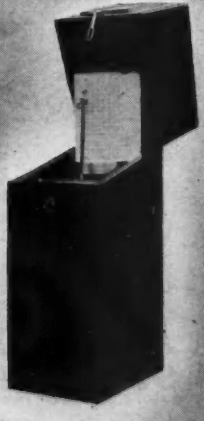


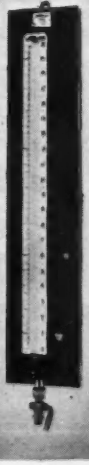
STEAM PRESSURE OPERATED GAS CONTROL VALVE

RELAY VALVE



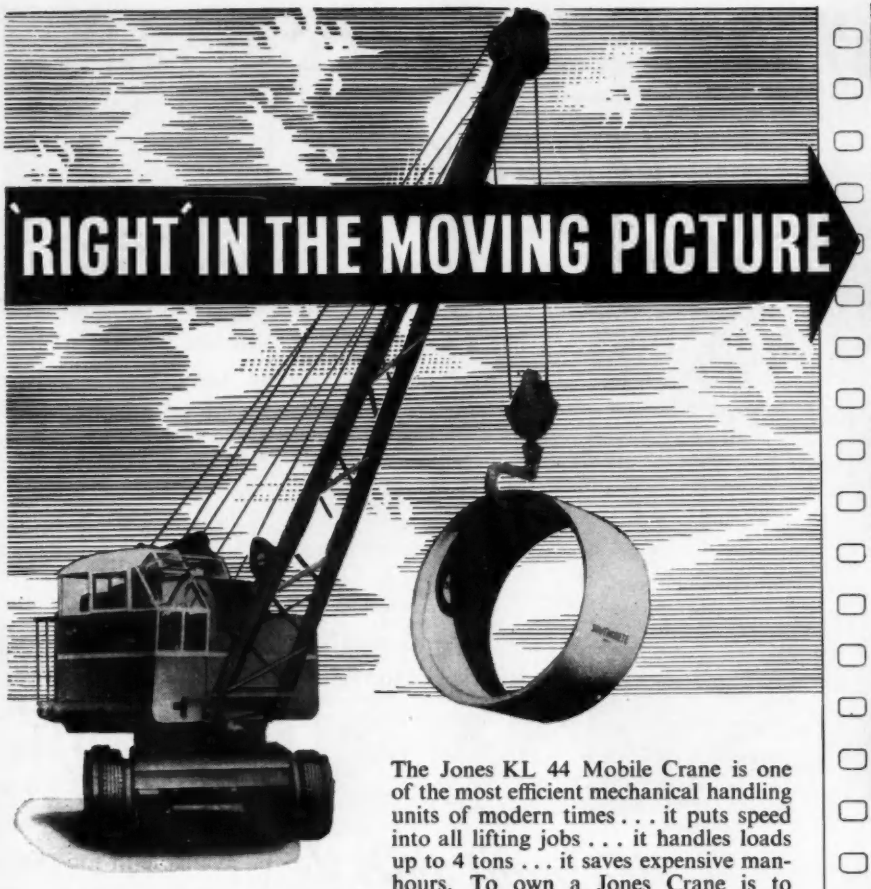
PRESSURE RECORDERS

FLOW INDICATORS

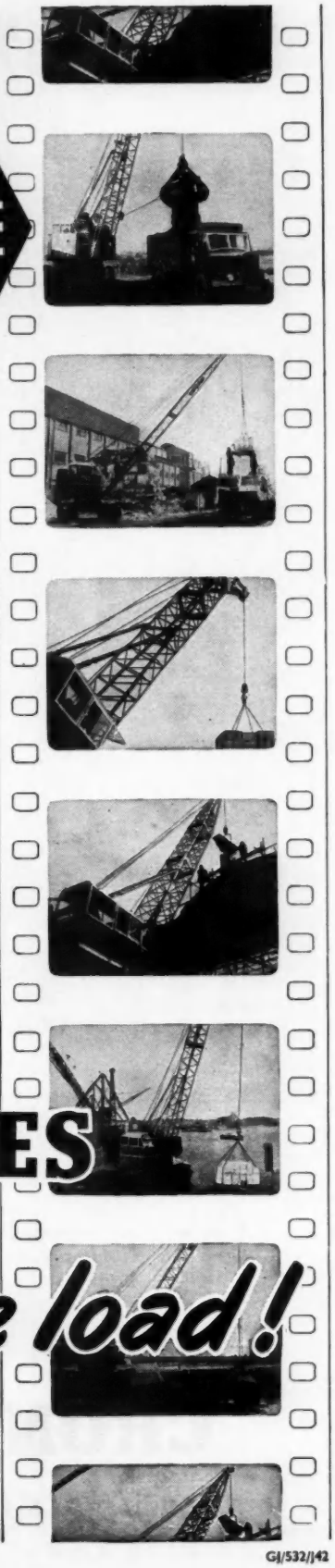


SINGLE COLUMN PRESSURE GAUGE

DOMESTIC AND INDUSTRIAL THERMOSTATS



'RIGHT' IN THE MOVING PICTURE



The Jones KL 44 Mobile Crane is one of the most efficient mechanical handling units of modern times . . . it puts speed into all lifting jobs . . . it handles loads up to 4 tons . . . it saves expensive man-hours. To own a Jones Crane is to possess a top-performance time and money-saver, ready to go into action instantly and in a hundred different ways. Jones KL Mobile Cranes can go anywhere . . . they are easy to operate . . . are designed for the safety and comfort of drivers . . . they can be supplied with a wide variety of jibs, grabs and other special equipment. And they are backed by the unique Jones KL guarantee and '4-point' service. Let us know your handling problems *now*—it is almost certain that a Jones Crane can solve them.

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take the load!

The range includes: **KL 15**—*for loads up to 15 cwt.;* **KL22**—*for loads up to 2 tons;* **KL 44**—*for loads up to 4 tons;* **KL 66**—*for loads up to 6 tons;* **KL 100 Rail Crane**—*for loads up to 5 tons.*

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GJ/532/J42

ONE MAN AND HIS STACKER . . .

he loads with it

1

Tows it

2

Unloads with it

3

It is amazing what one man can do when he has a C. & T. Light Mobile Stacker to help him. The photographs show one of these versatile, roadworthy machines loading waste firebricks into a lorry (photo 1), then being towed to a railway siding (photo 2) to discharge the bricks into a railway wagon (photo 3). The entire job is carried out quickly and simply—a much more efficient method than laboriously throwing the bricks into the vehicles. (Photographs by courtesy of Thomas Mouget and Co. Ltd., Contractors, Middlesbrough.)

The C. & T. Light Mobile Stacker is available in four sizes with maximum delivery heights between 10 ft. 8 in. and 18 ft. At minimum elevation the exceptionally low overall height allows easy access to all parts for maintenance. Drive is electric, diesel or petrol.

Stacking coal in a cellar within 2 ft. of the ceiling . . . a faster, less costly method than barrowing and shovelling as done previously. (Photograph by courtesy of Jowett Cars Ltd., Bradford)

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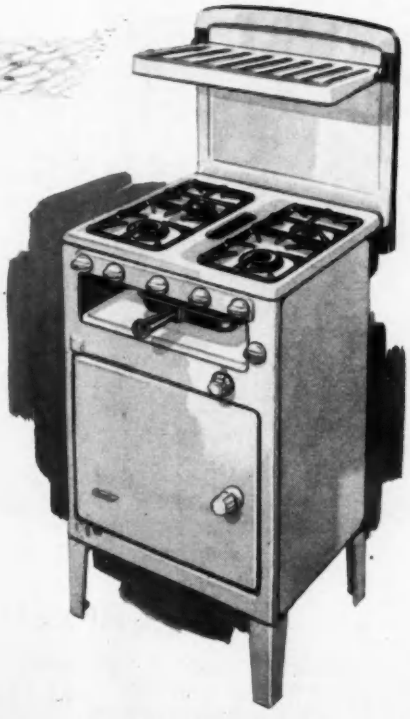

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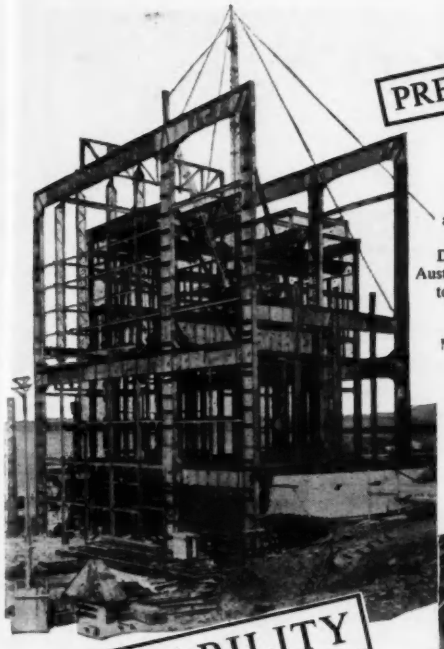
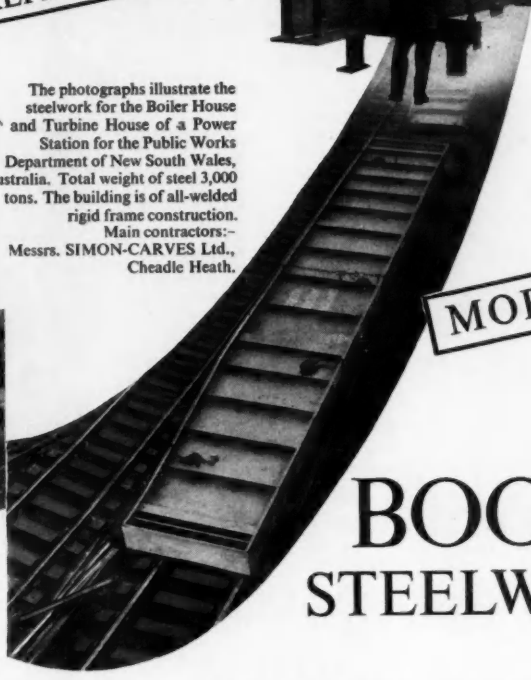


PREFABRICATION

The photographs illustrate the steelwork for the Boiler House and Turbine House of a Power Station for the Public Works Department of New South Wales, Australia. Total weight of steel 3,000 tons. The building is of all-welded rigid frame construction. Main contractors:- Messrs. SIMON-CARVES Ltd., Cheadle Heath.

MOBILITY



STABILITY

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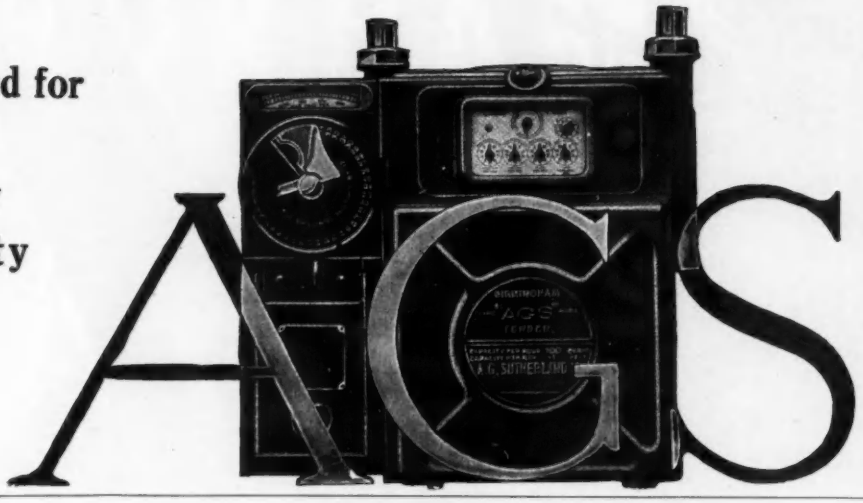

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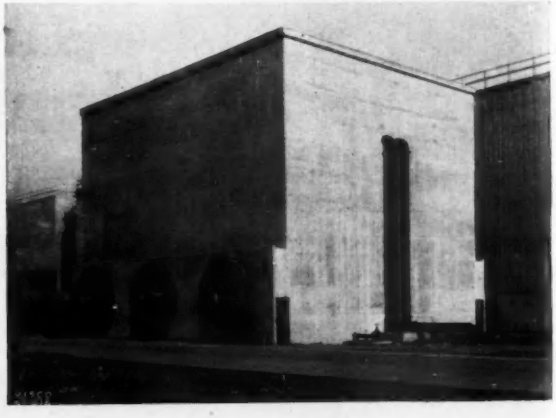

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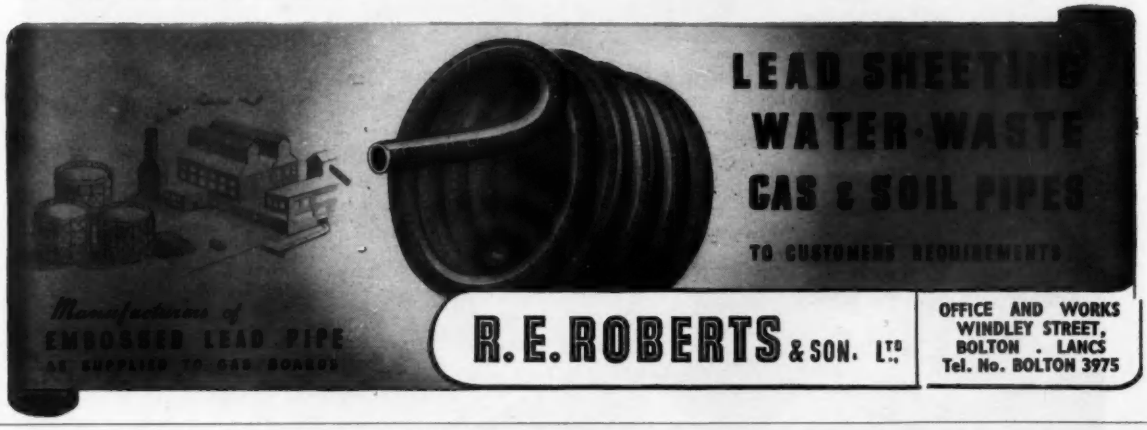

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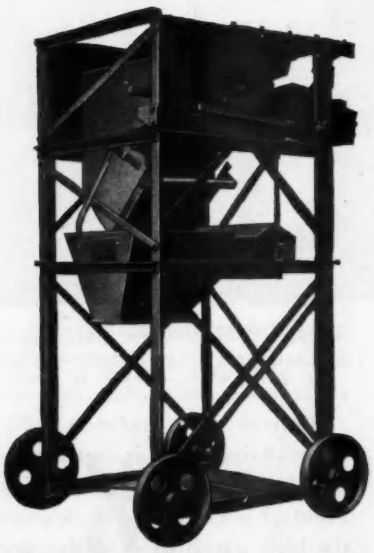

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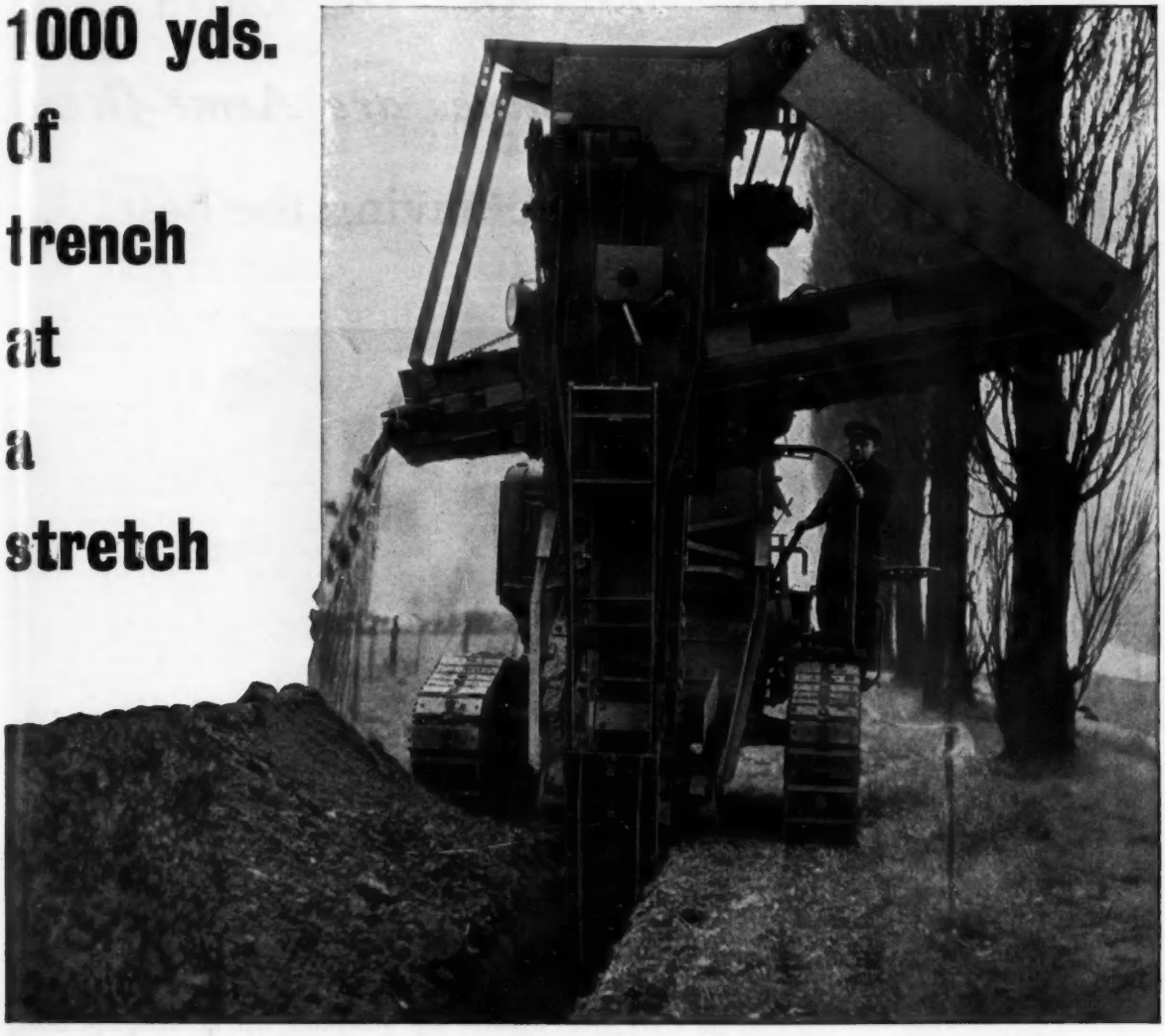

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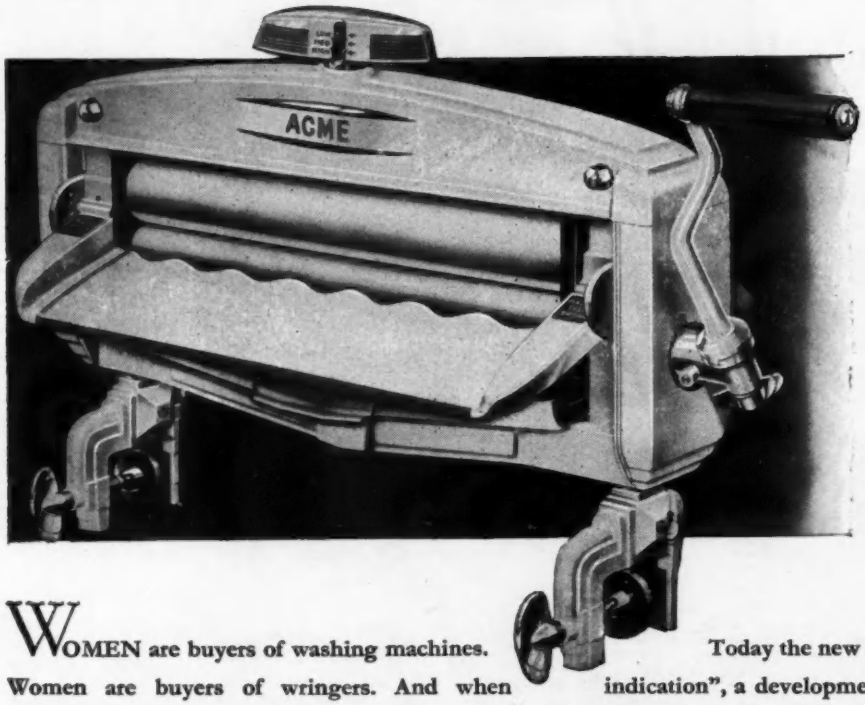

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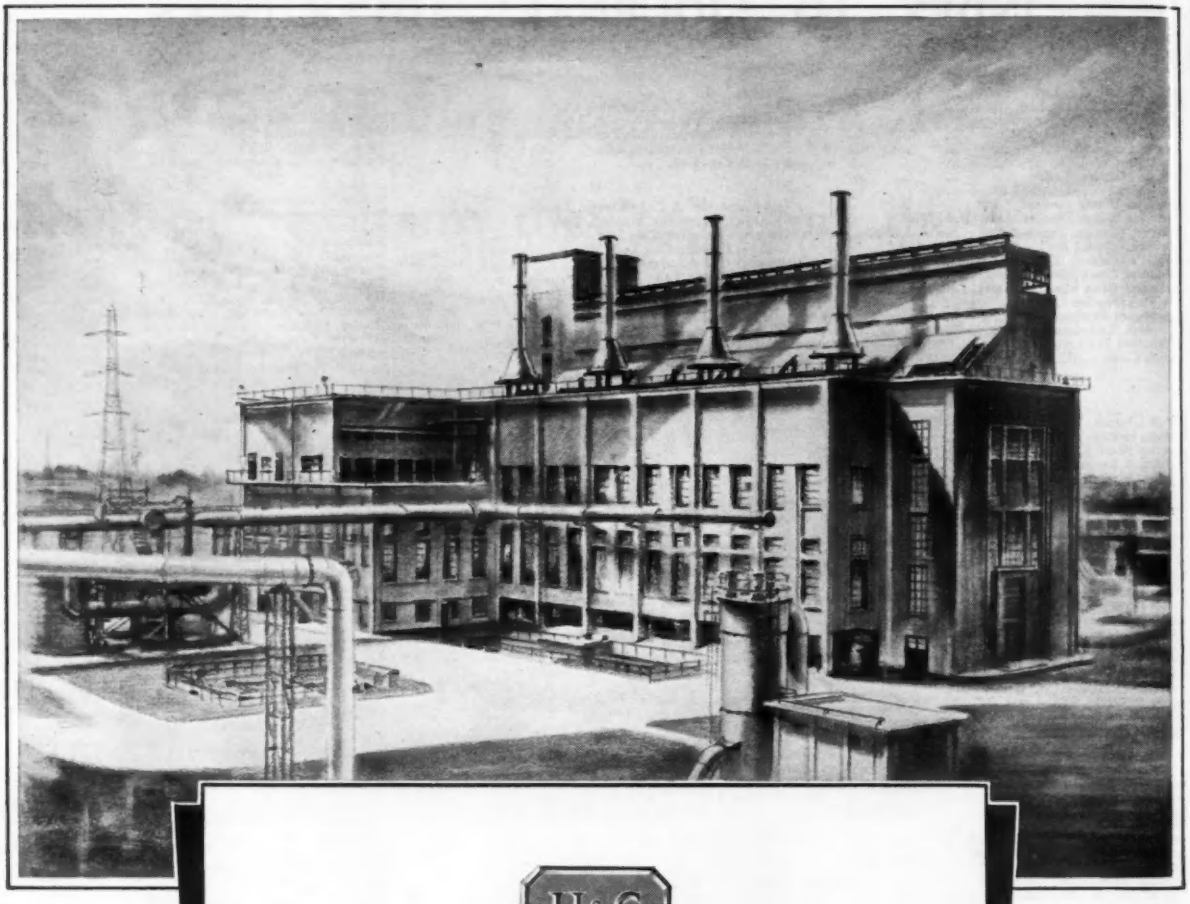
INDEX TO 'JOURNAL' ADVERTISERS

	PAGE
A	
A.C.E. Machinery, Ltd.	
Abbott, Birks & Co., Ltd.	
Accurate Recording Instrument Co.	
Acme Wringers, Ltd.	326
Aerogen Co., Ltd.	315
Aerograph Co., Ltd.	
Alcock & Mackay, Ltd.	
Allan Taylor (Engineers) Ltd.,	
Ascot Gas Water Heaters, Ltd.	
Ascot Gas Water Heaters, Ltd. (F.A. Neat)	
Ashmore, Benson, Pease & Co	Facing p. 337
Ashworth, Thos., & Co., Ltd.	
Associated Lead Manufacturers, Ltd.	
Associated Lead Manufacturers, Ltd. (Rustodian)	
Atlas Preservative Co., Ltd.,	
Autocontrol Boilers Ltd.	306
Automatic Telephone & Electric Co., Ltd.	
Automotive Products, Ltd.	
Averill, C. R. Ltd.	
B	
Baile & Church, Ltd.	357
Balfour, Henry, & Co., Ltd.	
Barwaco Meters, Ltd.	312
Bellham & Sons, Ltd.	
Blakeley Firth, Sons & Co., Ltd.,	
Bolton's Superheater & Pipe Works, Ltd.	
Booth, John, & Sons (Bolton), Ltd.	321
Brett Colbran, Ltd.	
Bray, George, & Co., Ltd.	
Bray, W. E., & Co., Ltd.	
British Flint & Cerium Manufacturers, Ltd.	310
British Gas Purifying Materials Co.	
British Oxygen Co., Ltd.	
British Rototherm Co., Ltd.	
British Thermostat Co., Ltd.	
British Thomson Houston, Ltd.	
British Tyre and Rubber Co., Ltd.	
British Vacuum Cleaner & Engineering Co., Ltd.	
Broadbent, Thomas, & Sons, Ltd.	
Brockhouse Heater Co., Ltd.	
Broom & Wade, Ltd.	
Brown, J., & Co., Ltd.	356
Bugden, Thos., & Co.	
C	
Cambridge Instrument Co., Ltd.	
Cannon (G.A.) Ltd.	308
Cementation Co., Ltd.	
Chamberlain Industries, Ltd.	
Chemical Engineering Wiltons, Ltd.	
Chemical & Insulating Co., Ltd.	
Cinema-Television, Ltd.	
Clapham Bros., Ltd.	314
Clayton, Son & Co., Ltd.	309
Clifford Engineering Co., Ltd.	356
Cohen, George, Sons & Co., Ltd.	317
Concentric Manufacturing Co., Ltd.,	
Concrete Proofing Co., Ltd.	
Cort, Robert, & Son, Ltd.	307
Cox & Danks Ltd.	
Crane, Ltd.	
Crone & Taylor, Ltd.	318
Crosby & Co., Ltd.	
Crossley Bros.	
Curtis, A. L., & Co.	
Cutler, Samuel, & Sons, Ltd.	
D	
Davenport Engineering Co., Ltd.	
Davey, Paxman & Co., Ltd.	
Dawe Instruments, Ltd.	
De la Rue, Thomas, & Co., Ltd. (Gas Group)	
Dempster, R. & J., Ltd.	305
Dempster, Robert, & Sons, Ltd.	342
Derbyshire Silica Firebrick Co., Ltd.	
Diaphragm & General Leather Co., Ltd.	316
Dick, R. & J., Ltd.	
Donkin (The Bryan) Co., Ltd.	Cover II
Douglas, Robert M., (Contractors), Ltd.	
Douglas, William, & Sons, Ltd.	
Drakes, Ltd.	
Drew, H. B., Ltd.	
Dunlop & Ranken, Ltd.	
Dunlop Rubber Co., Ltd., (Gen. Rubber Goods Div.)	345
E	
E.B. Refractory Cement Co., Ltd.	
Easiclene Porcelain Enamel Ltd.	
Edgar, William, & Son, Ltd.	
Elcontrol, Ltd.	356
Electrofio Meters Co., Ltd.	
Electrolux Ltd.,	311
Elliott Bros. (London), Ltd.	
English Electric Co., Ltd.	
Ether, Ltd.	310
Evershed & Vignoles, Ltd.	
Evode, Ltd.	
Ewart Chainbelt Co., Ltd.	356
Expanded Metal Co. Ltd.	
F	
F. C. Construction Ltd.,	
Fibreglass, Ltd.	
Flavel, S., & Co., Ltd.	352
Fluxite, Ltd.	
Fowler, John, & Co. (Leeds), Ltd.	306
Franki Compressed Pile Co., Ltd.	
Fraser & Chalmers, Engineering Works	
Fry's Metal Foundries, Ltd.	
Fyffe & Co., Ltd.	
G	
Gas Chambers & Coke Ovens, Ltd.	
Gas Purification & Chemical, Ltd.	358
General Descaling Co., Ltd.	
General Electric Co., Ltd.	
General Gas Appliances, Ltd.	323
Gibbons Bros., Ltd.	
Gibbons (Dudley), Ltd.	
Gibson, John, & Son, Ltd.	
Glover, George, & Co., Ltd.	
Glover, Thomas, & Co., Ltd.	Cover I, 330
Godfrey, Sir George, & Partners (Industrial), Ltd.	
Goodall Clayton & Co., Ltd.	324
Goodyear Mechanical Goods	
Grant & West, Ltd.	
Graphite Products, Ltd.	356
Green & Boulding, Ltd.	357
Gunite Construction Co., Ltd.	310
H	
Hamilton, A. H., & Co., Ltd.	
Hardman & Holden, Ltd.	
Harris & Pearson, Ltd.	
Harrisons (London) Ltd.,	
Harvey, G. A., & Co. (London) Ltd.	
Hick Hargreaves & Co., Ltd.	
Hilmor, Ltd.	
Hills (West Bromwich) Ltd.	
Holmes, W. C., & Co., Ltd.	359
Honeywell-Brown, Ltd.	
Horseley Bridge & Thomas Piggott, Ltd.	
Horstmann Gear Co., Ltd.	
Howden, James, & Co., Ltd.	
Humphreys & Glasgow, Ltd.	328
I	
Ideal Boilers & Radiators, Ltd.	
I.C.I., Ltd. (Metals Division)	
Inertol Co., Ltd.	
Ingham, John, & Sons, Ltd.	
International Combustion, Ltd.	
J	
Jeavons, E. E., & Co., Ltd.	
Jeavons Engineering Co.	
Jenkins, W. J., & Co., Ltd.	
Jobling, James A., & Co., Ltd,	
K	
Keay, E. C. & J., Ltd.	
Keith Blackman, Ltd.	360
King, Geo. W., Ltd.	
King, Walter, Ltd.	357, 358
Kings Patent Agency, Ltd.	
Kirk & Co. (Tubes), Ltd.	
Kirkham Hulett & Chandler, Ltd.	320
L	
LaFarge Aluminous Cement Co., Ltd.	
Laidlaw, R., & Son (Edin.), Ltd.	
Lamont, James H., & Co., Ltd.	
Lanarkshire Bolt & Rivet Co., Ltd.	
Lancashire Dynamo & Crypto, Ltd.	
Le Bas Tube Co., Ltd.	
Lionweld, Ltd.	315
Lind, Peter, Ltd.	
M	
Macpherson, Donald, & Co., Ltd.	
Magnetic Valve Co., Ltd.	313
Main, R. & A., Ltd	346
Marco Conveyor & Engineering Co., Ltd.	321
Meltham Silica Fire Brick Co., Ltd.	
Mercol Products, Ltd.	
Messenger & Sons, Ltd.	
Metropolitan Leather Co., Ltd.	
Milnes Meters, Ltd.	
Mitcham Smelters, Ltd.	358
Mitchell, H., & Co.	
Moler Products, Ltd.	
Monk, A., & Co., Ltd.	
Morgan Crucible Co. Ltd.	
Morris Commercial Cars, Ltd.	
N	
National Benzole Co., Ltd.	349
National Enamels, Ltd.	
New Conveyor Co., Ltd.,	
Newton Chambers & Co., Ltd.	Cover IV
Norwest Construction & Co., Ltd.	
Nu-Swift, Ltd.	357
O	
Oakland Metal Co., Ltd.,	
Olding, Jack, & Co., Ltd.	325
Oxley Engineering Co., Ltd.	
P	
Parkinson & Cowan (Gas Meters), Ltd.	330
Parkinson Stove Co., Ltd.	
Pass, E., & Co., Ltd	
Peckett & Sons, Ltd.	
Peebles & Co., Ltd.	
Pegson, Ltd.	
Perl Controls, Ltd.	
Plus Gas Co., Ltd.	
Pollock & Peel, Ltd.	
Power Gas Corporation, Ltd.	Facing p. 337
Pratt Engineering Co.	
Press, William, & Son, Ltd.	
Pulsometer Engineering Co., Ltd.	
R	
R.T.S.C. Home Sales Ltd.	
Radiant Heating, Ltd.	
Radiation, Ltd.	350, 351
Rawlplug Co., Ltd.	
Reavell & Co., Ltd.	356
Richmond Welding Co.	
Riley, A. J., & Son, Ltd.	
Roberts, R. E., & Sons, Ltd.	324
Robinson, J. H., & Co. (Liverpool), Ltd.	
Royles, Ltd.	
Royston, Geo., & Son, Ltd.,	
Russell Bros., (Walsall), Ltd.	
Russell, R., & Sons, Ltd.	356
S	
Salter, T. E., Ltd.	329
Saunders Valve Co., Ltd.	
Scottish Non-Ferrous Tube Industries, Ltd.	
Senior Economisers Ltd.	
Service Electric Co., Ltd.	
Siebe Gorman & Co., Ltd.	
Sigma Instrument Co., Ltd.	
Simon-Carves, Ltd.	
Simon, Richard, & Sons, Ltd.	324
Sisson, W., & Co., Ltd.	
Smith Meters, Ltd.	
Smith, Thos. & Sons (Rodley), Ltd.	
Southalls (Birmingham) Ltd.	
Spence, Peter, & Sons, Ltd.	
Spencer Bonecourt, Ltd.	
Sperryn & Co., Ltd.	
Stanton Ironwork Co., Ltd.	
Staveley Iron & Chemical Co., Ltd.	
Stein, John G., & Co., Ltd.	
Stelcon (Industrial Floors), Ltd.	
Stewart & Gray, Ltd.	360
Stewarts & Lloyds, Ltd.	
Stoves, Ltd.	319
Strachan & Henshaw, Ltd.	
Stringer Bros.	
Sutcliffe Speakman & Co., Ltd.	
Sutherland, A. G., Ltd.	322
T	
Thomas & Bishop, Ltd.	355
Thomas (Richard) & Baldwins, Ltd.	
Thompson, John, Conveyor Co.	
Thorp, Thomas, & Co., Ltd.	316
Tubela Engineering Co., Ltd.	
Tucker Eyelet, Geo., Co. Ltd.,	
Tully, Sons & Co., Ltd.	
Turners Asbestos Cement Co., Ltd.	
U	
Underpressure Engineering Co., Ltd.	356
United Kingdom Construction & Engineering Co., Ltd.	
V	
Vale, Thomas, & Sons, Ltd.	
Visco Engineering Co., Ltd.	322
Vulcan Stove Co., Ltd.	
W	
Wakefield, C. C., & Co., Ltd.	
Wakelin, F. H., Ltd.	
Walker, C. & W., Ltd.	352
Walker, Crosweller & Co., Ltd	
Waller, George, & Son, Ltd.	
Ward, Thos. W., Ltd.	
Warsop Power Tools Ltd.	
Weatherill, F. E. Ltd.,	
Wellington Tube Works, Ltd	
Wellman Smith Owen Engineering Corpn., Ltd.	
West's Gas Improvement Co., Ltd.	Cover III
West Hunwick Silica & Firebrick Co., Ltd.	Cover II
West's Piling & Construction Co.	
Westwood & Wrights, Ltd.	
Wheatsoe, Ltd.	
Wilkes, A. H., & Co., Ltd.	
Willey & Co., Ltd.	
Williams, John E., Ltd.	
Williamson Cliff, Ltd.	
Wilson, George, Gas Meters, Ltd.	
Winn & Coales, Ltd.	
Woodall-Duckham Vertical Retort & Oven Construction Co. (1920), Ltd.	Facing p. 336
Wood, Hugh, & Co., Ltd.	
Wright, Alexander, & Co., Ltd.	
Y	
Yorkshire Copper Works, Ltd.	

Agencies	
Appointments Vacant	358
Appointment Wanted	358
Contracts Open	
Educational	
Fellowship	
Miscellaneous	358
Notice	
Patents	
Plant For Sale and Wanted	358
Publications	
Repairs	



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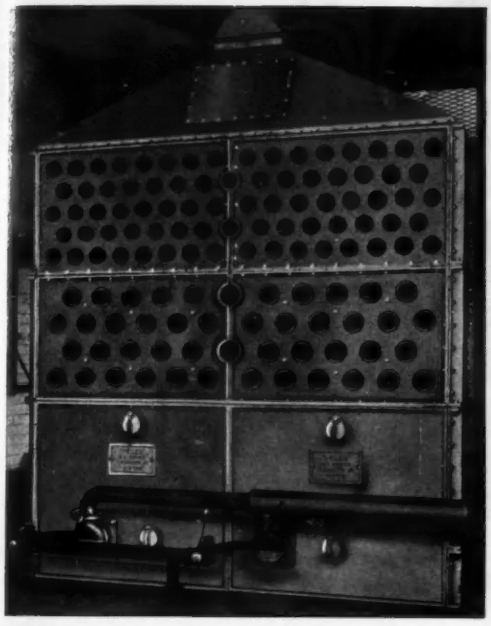

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VOL. 275 NO. 4705 August 5, 1953

CONTENTS

Page

EDITORIAL COMMENT

Towards a Fuel Policy ... 331
The Third Quinquennium ... 332
Selling Coke ... 332
Oil Refining Expansion ... 333
Refining in the United Kingdom ... 333
A Changing Scene ... 333
Cooking by Coke ... 333

PERSONAL ... 334

NEWS OF CURRENT EVENTS

Diary ... 334
1953 Journal Directory ... 334
Catalytic Cracking ... 335
Coal Merchants' Margins ... 348
British Standards ... 348
Conservation of Raw Materials ... 348
Link Between Consumer and Board: Four Years of Consultative Council Work ... 353
Royal Welsh Agricultural Show ... 354
North Eastern First Aid Competition ... 355
News in Brief ... 355

FEATURE ARTICLES

Gasworks Motor Control Gear ... 335
The Parsons Oil Gas Process: Enrichment of Producer and Blue Water Gas. By W. K. Parsons, Engineer and General Manager, Rhos, Wales Gas Board ... 336

TECHNICAL RECORD

Developments in the Wales Area. By E. M. Edwards, Member, Wales Gas Board (Continued from July 29) 339
Increasing the Popularity of Coke Sales. First Prize Winning Paper in the Sir John Charrington Competition. By R. F. Knowlden, Coke Officer, Bristol Sub-Division, South Western Gas Board ... 343
I.G.E. Discussions: Written Contributions to Papers ... 347

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GAS JOURNAL

VOL. 275. No. 4705 105TH YEAR August 5, 1953

TOWARDS A FUEL POLICY

THE review of the first four years' work of the Eastern Gas Consultative Council which its Chairman, Alderman Richard Turner, J.P., presented recently, and which we summarise on other pages of this issue, is indicative of the diligence with which consultative councillors in general have applied themselves to the novel task of watching consumer interests and interpreting to consumers the policy of the gas boards. The Eastern Council is probably unique in that its Chairman, who was General Manager and Secretary of the Bedford Group of U.K. undertakings prior to natioalisation, came to his new job with a peculiarly well informed background. He is supported by men and women members of varied experience in municipal, industrial, and trade union circles who have the good sense to recognise the value of his intimate knowledge of the industry and his unwillingness to be swayed by passing enthusiasms for changes which might have a popular appeal but do not ensure ultimate improvement either in efficiency, economy, consumer service, or price.

It is unfortunate that the first four years, in all the areas, have been marked by repeated increases in the price of gas to keep pace with rises in costs—less some substantial savings as a result of economies rendered possible by integration and improved technical results —but at any rate, so far as the Eastern area is concerned, 446 old tariffs have been superseded by a single all-purpose non-domestic block rate tariff, and the gap between highest and lowest prices has been narrowed. If the public is still ignorant of the structure, functions, and achievements of the Council it is not because it has not had a good Press. Mr. Turner rightly acknowledged that only the Council could have obtained such publicity for the nationalised industry. Questions of electrical competition and freedom of choice have been much discussed, and while the Council has advocated freedom of choice for tenants of new council housing estates it has not lost sight of the fact that if the Gas Board fails to secure an adequate share of the business the loss incurred in laying mains will have to be borne by the general body of consumers. Mr. Turner asks whether both gas and electricity should be made available; if so, then it must be laid down which fuel is to be used for which purpose if losses are to be avoided.

The Council has always felt strongly on the matter of a national fuel policy, and has asked what steps could be taken to bring it about. At which end would a start be made? Mr. Turner has reached the conclusion that if joint committees were set up to deal with all fuels they would get down to the problem and a national fuel policy would emerge. He does not think it would work downwards from the Minister; he thinks it would work upwards to the Minister from the joint committees. And he concludes his interesting review with a series of questions which he leaves it to others to answer. Are joint reading of gas and electricity meters, joint accounting, joint showrooms, and joint staffs desirable? Should coke be priced at a figure to induce its more general use instead of being priced artificially as at present so as to enable gas to be sold as cheaply as possible to compete with other fuels? Is oil to become a permanent competitor or is it only a temporary supplement during a period of fuel shortage? Under present competition prospective consumers are waited on as never before; how would they fare under a national fuel policy? Efficiency of present day appliances is the outcome of competition between the manufacturers who are out to produce at the lowest price and give the best performance, and this trend could be continued under any new policy.

Turning from Alderman Turner's four-year review to the more immediate concerns of the meeting at which it was presented, we cannot but be perturbed by the trend in the baking industry from gas to oil firing for its bread baking ovens. From one of the leading makers of bakers' ovens it was learnt that whereas the majority of their products used to be gas-fired they were now almost 100% oil-fired. A large co-operative bakery was installing a new oil-fired oven with a capacity one and a half times that of an existing gas-fired oven and was seriously thinking of converting the present oven to oil.

Since nationalisation the tendency in all the areas has been to base tariffs on quantities of gas consumed rather than on the particular trades concerned, and many industries which prior to 1949 had been granted special concessions have felt aggrieved at the considerable reduction in the number and range of tariffs now available. The bakers, concerned as they are with trying to maintain the supply of the 'staff of life' without undue increase in the cost of living, have declared unequivocally that gas is now too dear. (We must assume that they have weighed all the advantages of gas against the disadvantages of other fuels.) There was good sense in the suggestion at the meeting that the electricity consultative council might be invited to join in pressing for the only real solution of the problem—a national fuel policy.

THE THIRD QUINQUENNIUM

THE year 1952 marked the end of the third quinquennium of the British Coal Utilisation Research Association, and since it is customary for a research association, towards the close of every fifth year, to review its work, and growth, the annual report for 1952 is worthy of particular attention. The coal industry, which was nationalised in 1947, always provided a large proportion of B.C.U.R.A.'s industrial income; early in the quinquennium the three large coal-consuming industries— gas, electricity, and transport— were also nationalised and assumed membership of the Association. All four are thus linked with private industrial coal distributors, appliance makers, and consumers intimately concerned with coal utilisation. It is therefore true that, as the report states, throughout the past five years the Association has found itself moving rapidly towards a focal position in national fuel utilisation research. This third quinquennium has seen the concentration of the whole of the Association's intramural research activities on one site at Leatherhead, thus making possible a well-integrated programme. This programme is directed to practical ends, and it is undertaken in support of five further major programmes relating to the use of coal in the home and in industry. That on the domestic utilisation of fuel is directed mainly to obtaining better heat service and reduced smoke emission, and improved principles of appliance design are a predominant objective. The second relates to steam-raising in shell boilers—a purpose absorbing some 30% of all coal raised. Current emphasis concerns the problems of how to exploit or circumvent the effects of fuel characteristics, as well as factors in appliance design. The third embraces the gasification of coal, particularly in the industrial gas producer, the performance of which depends upon the behaviour of fuel beds during and after carbonisation, a paramount objective being the production of gas of good and consistent quality. The fourth field concerns the utilisation of low-grade fine coal, often hitherto rejected because of the difficulties presented by its use in normal plant. Two possible solutions under investigation are gasification in producers and combustion in cyclone chambers with possible application to gas turbines. Lastly comes the important research carried out partly at power stations and partly in the laboratory in connection with the Boiler Availability Committee's programme on external deposits and corrosion in water-tube boiler plant.

It will be seen, therefore, that the programme now being undertaken is wide in scope and of unquestionable importance to the fuel industries and their customers. But what of the future? The report explains that in looking ahead the Council was concerned that the vital programme in hand should lose none of its present momentum and that the impact of the Association's work on industry should be steadily increased. The Council was interested in establishing a more personal, and therefore more effective, link between the Association's own scientific staff and its counterparts in industry; and to this end a moderate enlargement of staff and facilities was necessary. In its submission to the D.S.I.R., therefore, the Council envisaged the need for increasing qualified staff from the present number of nearly 80 to 100; also the need for extending laboratory accommodation by erecting an administration building. It was suggested that this measure of expansion would require an increase in income from £300,000 in 1952 to some £350,000 in 1957, assuming a stable level of research costs. That is big money, but knowing the progress achieved to date by B.C.U.R.A., it is reasonable to hope that the increased cost will be a mere drop in the ocean compared with the saving in industry effected by the Association's work. We feel sure we are not alone in wishing B.C.U.R.A. every success in its next quinquennium.

SELLING COKE

AN increase of 3.8% in coke sales in the June quarter compared with the same period of 1952 is announced by the North Western Gas Board. This good news does not necessarily imply a general rise in demand. The Board itself says it may be due to anxiety about official warnings that stocks of household coal will be substantially less next winter than last. Stocks are plentiful, says the Board, but a heavy demand is anticipated as soon as the winter sets in. On the whole it seems that gasworks coke output is increasing at a greater rate than coke sales, and apart from spasmodic effects of fuel stock fluctuations there is need for a reinforcement of selling policy. The London and Counties Coke Salesmen's Circle did well earlier this year to stir up the enthusiasm of its members—who are drawn from among distributors as well as producers —by running a coke sales paper competition. The first prize winning paper by Mr. R. F. Knowlden, Coke Officer of the Bristol Sub-Division, an abstract of which we publish on other pages today, offers useful suggestions for increasing the popularity of coke in the domestic market. The issue is a serious one and if coke is to be made more popular a fundamental change in outlook is required.

Attractive advertising, education of coke salesmen, co-operation with traders and with the manufacturers of coke burning appliances, attention to bagging, handling, and transport problems, and the offering of inducements or incentives for encouraging sales of coke are among Mr. Knowlden's suggestions for restoring coke to the esteem it held in immediate pre-war days. Many merchants are coke minded and have played a worthy part in fostering sales, but there are others who regard coke as a makeshift substitute to be retailed when other fuels are scarce. Quality must therefore be one of the fundamentals of coke sales. Price is another factor. On this factor, however, Mr. Knowlden does not touch. Should price be more closely related to thermal value; should it be dictated solely by the prevailing price of coal; should it be regulated by considerations of maintaining as economic a price for gas as is possible; or should it be governed simply by the law of supply and demand? Whatever the answer, it is clear that no salesman can persuade a coal user to become a coke consumer if the price is beyond the capacity of his pocket, or if in terms of heating value it does not compare favourably with other fuels which are equally capable of being burnt in coke consuming appliances. Each time the consumer requires a fresh supply of fuel he has a number of alternatives from which to choose, and quite obviously he will select that which gives the best value for money.

OIL REFINING EXPANSION

THE ORGANISATION FOR EUROPEAN ECONOMIC CO-OPERATION has published its third report on co-ordination of oil refinery expansion in the O.E.E.C. countries. It covers, as did the former reports, trends of consumption, expansion of European refineries, currency and other economic effects of the European refinery expansion, and technical considerations. The expansion of refining in Europe has been greatly accelerated by a combination of causes which may well be regarded as exceptional. The most important have been a tendency to locate refineries at the point of consumption in Europe instead of at the sources of crude oil (providing an alleviation of balance of payments difficulties and an outlet for rising crude oil production in the Middle East), the very rapid upward trend in consumption since the war, and the closure of the Abadan refinery. By 1954 Europe will have an annual capacity of 94 mill. tons throughput, as against the maximum of 75 mill. tons by the middle of 1953 which was envisaged in the second report of the Organisation. At the end of 1954 it will have a further potential capacity of over 10 mill. tons. (The reports refer to metric tons; the conversion factor to long tons is 0.98421).

REFINING IN THE UNITED KINGDOM

THESE REPORTS have increasing significance to the gas industry. Not only the use of liquid propane-butane mixtures, of gas oil for carburetting, and of refinery tail gases, but also the element of competition and the overall incidence of price have their bearing on the working of the gas industry. The price factor is, of course, the ruling one. Taking petroleum products generally, internal consumption in the United Kingdom had risen by 1947 to 44% above its pre-war level. It then stayed more or less stable in 1948 and 1949 and rose in 1950 and 1951 by about 10%. In 1952 this rate of increase diminished to 1.4%. Internal consumption is now expected to rise at an average rate of 4.7% in 1953 and 1954 to reach 18.1 mill. tons in the latter year. Coming to a few further statistics of interest, in 1951 consumption of gas-diesel oil amounted to 2,883,000 tons, a level 140% above that of 1938. About 45% of that amount was used for transport, 4% for agriculture, and the balance for heating and industrial purposes. From 1951 to 1952, consumption fell slightly owing to the reduction of deliveries to gasworks. It is expected that it will now increase at an average yearly rate of about 3% to 4%. Now as to refining capacity. It is expected that the throughput of the United Kingdom refineries, which reached an annual rate of 24 mill. tons at the end of 1952, will increase to 30 mill. tons by the end of 1954. This expansion, which is much higher than that which was originally forecast, is largely due to the necessity of making good part of the loss of the Abadan refinery. In 1952, nearly 1.4 mill. tons of products from United Kingdom refineries, including nearly 1.2 mill. tons of fuel oil, were supplied to destinations east of Suez. And by 1954 the United Kingdom will probably be able to supply nearly all her requirements except kerosene and aviation gasoline.

A CHANGING SCENE

STATISTICS RELATING TO THE AMERICAN GAS INDUSTRY do indeed tell a vivid, though not unexpected, story of change. The whole industry is swerving from manufactured and 'mixed' gas to natural gas—the inevitable outcome of long-distance transmission, interlinkage, first-class publicity, and a relatively cheap natural gas therm. The last point is, of course, the all-important one. Let us take a glance, first, at manufactured gas (the near enough equivalent of our own town gas). During the first quarter of 1953 customers, sales, revenues, all showed a decline, with the one exception of industrial users. This is no new feature. It represents a continuation of declines occurring in previous periods and is due primarily to conversion of 'town' gas to natural gas. We give a few figures. Sales of manufactured gas in the January-March quarter were 1,095 mill. therms, a drop of 5.8% from sales in the comparable period of 1952. Residential sales declined by 4.9% and commercial sales by 14.3%. Industrial sales were up by 4.2%—a notable trend showing itself even with manufactured gas. Turning to natural gas, we find that in the quarter quoted sales to all users were up 8.7%. Once again the industrial classification recorded the greatest increase, 12.3%. Residential sales were 4.2% higher, while commercial sales increased 2.9%. Turning to the sales of the American gas industry as a whole during the quarter ended March 31 last, there was a gain of 7.7%, from 16,109 mill. therms to 17,344 mill. Consumers now number 26.2 mill. The most significant gains occurred in the industrial category, where sales were up 12.1%, revenues increasing by 20%. Residential and commercial sales gained 3.2% and 1.4% respectively. The advance for the year ended March 31 was a matter of 8.6% (industrial, 19.6%; residential, 5.2%; commercial, 5.1%). The representative picture is that gas service is being extended to communities not previously located on gas lines, particularly in the south, and the continued conversion of many gas undertakings to natural gas distribution.

COOKING BY COKE

IN A RECENT ISSUE we commented on the Gas Council's increased preoccupation with coke sales and the introduction of new publicity material emphasising the advantages of this fuel. That this trend towards coke consciousness is being maintained is evident from a perusal of a new G.C. publication, *Gas and Coke in Housing for Special Purposes*. This attractive booklet deals with the housing needs of particular classes of people—old people, single workers, nurses, and so on. The book is illustrated by photographs taken in old people's homes, homes for the blind, and factory hostels, which help to lend an air of authenticity to the publication and emphasise the need for carefully chosen fuel services to suit individual needs. There is no need to comment on the arguments used or the advice given; both are sound enough. What interests us is the substantial amount of space devoted to purely (or should we say preferably) coke appliances. The only coke-burning appliance missing is the solid fuel cooker, and we cannot help wondering why.

Heat storage cookers were heavily featured in the gas pavilion at the Royal Show; they were included in the exhibition staged for the launching of the *Coke-burning Appliances Handbook* (see *Journal* of July 1, pp. 28 and 33); and they were dealt with in the handbook to the extent of some 25 pages. Clearly then—right or wrong—solid fuel cookers are our accepted legitimate business. Why should they be excluded from a booklet which deals with buildings frequently fitted with such appliances. A great many hostels and places for communal living are so equipped, and we know of housing estates for old people in which even flats are supplied with the more inexpensive type of solid fuel cooker. Is it not time the industry made up its mind about this type of appliance which, incidentally, is growing in popularity? It is still a long way from becoming a menace to the gas cooking load, and in fact it is doubtful whether that is ever likely. But it can be argued that so much money is spent on such an appliance that the owner is unlikely to consider the purchase of a gas cooker, even for occasional or seasonal use; or, conversely, it can be argued that the demand for fuel for a solid fuel cooker is so regular—much more so than for a coke grate, for example—that it is just the sort of coke load that is most desirable.

Personal Notes

MR. F. HOLLWAY has succeeded MR. R. SIMPSON as Secretary and Accountant of the Workington group of the United Steel Companies, Ltd.

MR. A. FOX, Canteen Manager for the Staveley Iron & Chemical Co., Ltd., at its Derbyshire works, has been appointed industrial canteen liaison officer for the area.

MR. D. K. HOLLIDAY, B.SC.(TECH.), has been awarded the Seventh Arthur Duckham Research Fellowship of the Institution of Gas Engineers. He will, for the next 12 months, carry out, as a member of an international team sponsored by the Flame Radiation Research Joint Committee, approved investigations on radiation from flames in furnaces fired with various fuels, both in this country and and on the Continent. Mr. Holliday was educated at Wallasey Grammar School and Manchester University, where he obtained an Honours Degree in Technological Science. He has obtained practical engineering experience with West's Gas Improvement Co., Ltd. and other firms.

MR. LEONARD HALSEY, Sales Manager of the National Benzole Co., Ltd., has just completed 30 years service with the company. Joining as a sales representative, he was appointed Bristol Divisional Manager in 1924, Midland Divisional Manager, in 1931, Divisional Manager, South Midland, in 1935 and, in 1945, Group Sales Manager. He has held his present position since 1949.

A Wales Gas Board cricket team organised by Mr. D. S. Davies, Engineer and Manager of the Abertillery undertaking, and comprising players from Abertillery, Pontypool, Aberdare, Newport, and Llanidloes, visited Stechford and defeated a team representing the Parkinson Stove Co., Ltd., by 167 runs to 101. Mr. A. Sadler, Parkinson's Wales Area Manager, accompanied the visitors, who were welcomed at lunch by Mr. J. L. Anstey, Sales Manager. Mr. Davies replied on behalf of the visiting team. Left to right in the photograph are H. Evans, Engineer and Manager at Newtown; D. S. Davies; Mr. J. L. Anstey, and R. Davies, Engineer and Manager at Llanidloes, discussing prospects before the game.

Diary

August 17.—WEST MIDLANDS G.C.C., Queens Hotel, Birmingham, 2.30.

Sept. 1.—EAST MIDLANDS G.C.C., Victoria Station Hotel, Nottingham, 11.30 a.m.

Sept. 3-9.—BUILDING PLANT EXHIBITION, organised by the Ministry of Works. Goose Fair Site, Nottingham.

Sept. 3-17.—ENGINEERING, MARINE, AND WELDING EXHIBITION (including Chemical Plant Exhibition). Gas Council exhibit. Olympia.

Sept. 9.—SOUTH WESTERN G.C.C.: 34, Bridge Street, Taunton, 11 a.m.

Sept. 10.—WALES AND MONMOUTHSHIRE SECTION, I.G.E.: Annual General Meeting, Carmarthen; Discussion on the Report of the visit of the Gas Industry Productivity Team to the United States to be opened by E. M. Edwards, Member, Wales Gas Board.

The Telephone Number of G. L. Howarth & Co., Ltd., has been altered from Burnley 3834 to Burnley 6344/5 (two lines).

A Civil Defence Competition proved a very popular event at the annual sports day organised by the Harrogate Gas Sports and Social Club. Civil Defence teams were drawn from the York District Office, with similar teams from the Harrogate District Office, the competitors being required to put out an incendiary bomb, points being awarded for various stages of the drill. Mrs. N. C. Sturrock, wife of the Group General Manager, York-Harrogate Group, presented the Harrogate team leader with a cup, in addition to individual awards for the rest of the team.

1953 'Journal' Directory

THE following changes have been notified during the past month. To keep the information in the 1953 edition of the *Gas Journal Calendar and Directory* up to date readers are invited to note these alterations (together with the appropriate adjustments relating thereto in the 'Personnel' section of the *Directory*, pp. 141-156):

Page 30.—SHEFFIELD AND ROTHERHAM: J. E. Brandon, *Dist. M.*, No. 1 District.

Page 33.—NORTHAMPTON: E. B. Craddock, *Group M.*, vice J. Corrigan (from October 1).

Page 37.—EASTERN GAS BOARD: Add George Calder, C.B., *Member*.

Page 43.—TOTTENHAM: J. E. Law, *Div. Commercial M.*, and H. W. Merrison, *Div. Service M.*, vice S. A. King, *Div. Sales and Service M.*

Page 76.—MIDDLESBROUGH (WESTERN SECTION): Delete S. Jones, *Sub-Div. M.*

Page 91.—STROUD: J. C. Cotterill, *E. & Dist. Officer*.

Page 94.—ST. AUSTELL: J. A. Bell, *E. & Dist. Officer*, vice J. C. Cotterill.

Page 99.—AYLESBURY: Delete E. B. Craddock, *M.* removed (from October 1).

Page 99.—BANBURY: Delete A. D. Hill, *M.* removed.

Page 101.—PORTSMOUTH, GOSPORT, AND BOGNOR REGIS: Delete E. Allison, *Ch.E.*, retired. H. M. Lawrence, hitherto *G.M.*, becomes *E. & G.M.* J. B. Rich, *Asst. E. & G.M.*

Page 101.—ISLE OF WIGHT: Delete L.G. Payne, *E. & G.M.*, retired. Delete J. B. Rich, *Dep.E.*, removed.

Page 105.—WALES GAS BOARD: Add Alderman Huw T. Edwards, J.P., *Member*.

Page 107.—PONTYPOOL: Delete J. Powdrill, M.B.E., *G.M. & E.* (from September 1).

Page 108.—CARDIFF: J. Powdrill, M.B.E., *G.M. & E.*, vice F. Boardman, retired (from September 1).

Page 115.—WEST MIDLANDS GAS BOARD: J. H. W. Reddall, *Deputy Coal and Transport Officer*, vice F. A. Riley, retired.

Pages 115 and 118.—WALSALL DIVISION: W. L. Jackson, *E.*

Pages 116 and 121.—SHROPSHIRE DIVISION: Delete C. M. D. Belton, *Div. Gen.M.*, retired. A. G. Addison, *Div. Distrib. E.*, and T. A. E. Purslow, *Div. Sales and Service Officer*, vice F. Caudwell, *Div. Distrib. E. and Sales and Service Officer*, retired.

Page 117.—WOLVERHAMPTON DIVISION: S. Jones, *Div. G.M.*

Page 119.—WARWICK: Delete W. H. Reed, *E. & M.*, retired.

Page 180.—WOMEN'S GAS FEDERATION: Dame Vera Laughton Mathews, *Chairman*.

Page 181.—NATIONAL JOINT COUNCIL FOR GAS STAFFS: G. H. Newman, *Staff Side and Joint S.*, vice J. E. N. Davis.

Page 184.—WALES AND MON. JUNIORS: *Pres.*, R. Jones (Wales Gas Board headquarters); *Senior Vice-Pres.*, J. Woodcock (Colwyn Bay); *Junior Vice-Pres.*, C. E. Banham (Cardiff); *Hon. Sec.*, S. G. Meade (Newport); *Chairman*, North Wales Section, C. W. Butler (Rhyl).

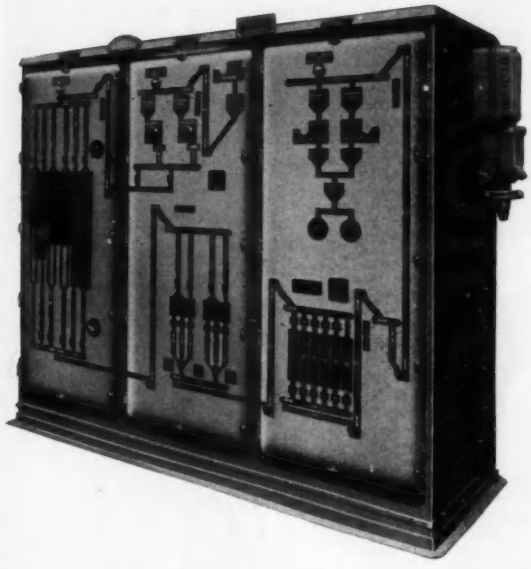
Pages 290 and A16.—WOODALL-DUCKHAM: Name shortened to Woodall-Duckham Construction Co., Ltd.

Pages A7 and A104.—THOMAS GLOVER & Co., LTD.: T/N changed to EDMonton 2641.

Gasworks Motor Control Gear

THE handling and storage of materials in a gasworks have passed the stage when the control of electric motors was no greater problem than the provision of a starter for each motor, with each drive considered separately. For increased economy in labour and efficiency of plant, the handling of materials through the sections of the works, often with alternative routes, can no longer depend on manual control of multiple drives.

An electrically and mechanically integrated scheme must be applied, suited to the production needs of the works, with flexible but simplified operation and control methods, combined with robust construction and serviceability for continuous use under onerous conditions. The success of such schemes is dependent not only on the plant layout, but on the convenient operation provided by correctly designed electric



Motor control panel with visual flow diagram and indicating lamps. (Photo courtesy Brookhirst Switchgear, Ltd.)

control and on the protection given by such control against faulty operation of the plant.

While each particular drive, conveyor, feeder, coal breaker, coke cutter, elevator, etc., may be an individual problem, their integration into a combined scheme requires a clear knowledge of the various material flows, with their essential interlocks and operating conditions. These should preferably be provided to the control gear maker, not as a schedule of motors and a general specification, but better by a line diagram showing the plant layout.

The control gear maker can then propose the best method of control, with the necessary electrical interlock, in full collaboration with the plant engineer, to provide the right design from the units and components of control gear which have been standardised and tooled for economical production as the result of experience of other installations having comparable problems and similar details. When plant is scattered over a wide area, it is advantageous to show not only the conveyors in operation but also precise information about the flow and storage of material in the system. To obtain this a mimic diagram of the plant can be included in the central control desk. Visual flow indication is a comparatively recent development of such value that it is becoming almost inseparable from any consideration of remote control of large material handling schemes. It does more to foster confidence in the operation and supervision of the plant than any other form of remote indication.

The mimic diagram represents in schematic form (using lines for conveyors and symbolic shapes for chutes, hoppers, etc.) the physical location and relative dispositions of all handling and processing plant, including feeding and delivery points, main and by-pass routes and cross-over points. The drives are represented by small pilot lamps positioned correctly on the mimic diagram in relation to the actual layout. These lamps are arranged either in two-colour code to indicate 'running' or 'stopped' or are located in arrow-shaped cavities (covered with coloured translucent material) in the flow lines of the diagram.

If individual push-button control is provided, each control button can be situated next to the symbol representing the drive controlled, or, alternatively, the pushes may be located in the flow line itself. Selector switches can also be located in the flow line so that the hand position for 'on' is in line with the flow and that for 'off' is at right-angles to the flow. The use of a distinctive colour to represent each separate section of the plant or to distinguish separate flow lines makes the mimic diagram still more clear and readable.

As each motor starts, the corresponding pilot lamp on the mimic diagram is illuminated until finally the whole flow of material from start to finish, through all processes, and past all switches, is realistically imaged. Every running motor is clearly indicated, so that the exact position of any stoppage can be easily determined. In the event of any particular motor shutting down, all motor indicating lamps will be extinguished up to the point where the stoppage has occurred, and instant steps can be taken to investigate the cause of the breakdown.

Where a number of alternative sequences are available, a series of descriptive master charts is sometimes provided, each having a reproduction of the mimic diagram. Superimposed upon this, usually in colour, are shown the motors required to run, the position of switches, and other information necessary to put a particular material flow into operation. When a particular flow or flows have been decided upon, the required chart is selected and placed in a space provided for it on the face of the control board.

Having ascertained that all control, selector, and chute switches are correctly positioned in the control board by reference to the master chart, the whole plant is started in the correct order by push-buttons or, in fully automatic operation, by a single push-button.

If desired, audible alarm signals can be fitted at selected points to give indication of conditions dangerous to the plant, such as choking. Alarm buzzers and bells are also frequently employed in extensive plants to be sounded automatically before starting machinery from a distance. Due safeguards are also provided for local operators by local switches which are 'master' over the central control.

The design of flow diagrams is very flexible and can be applied to the conveying and processing of any kind of material. [From the June, 1953, issue of *West's Gas.*]

Catalytic Cracking

CATALYTIC CRACKING of natural gas and other hydrocarbons of low molecular weight has achieved industrial importance as a method for producing town gas and petrochemical raw materials. Emergency conditions, economic factors, or depletion of hydrocarbon sources may necessitate charging sulphur-contaminated stocks not now usable because of loss of catalyst activity due to sulphur poisoning.

Results of a search, conducted by the Institute of Gas Technology of Chicago, under the sponsorship of the American Gas Association, for a highly active, sulphur resistant catalyst, are presented in I.G.T. Research Bulletin No. 4, 'Cracking Catalyst Activity in the Presence of Hydrogen Sulphide,' prepared from the experimental data of C. H. Riesz and J. J. S. Sebastian by H. A. Dirksen, H. R. Linden and E. S. Pettyjohn.

Elements known to have activity in the steam-hydrocarbon and related reactions were tested in oxide, sulphide, and reduced forms. They were nickel, iron, and cobalt of group VIII, chromium, molybdenum, and tungsten of sub-group VIa, and vanadium, columbium, and tantalum of sub-group Va, with thoria and zirconia of sub-group IVa as promoters. Their activities in the absence of sulphur were first determined; then hydrogen sulphide was added to the feed stream and their activities were noted at half-hourly intervals for the three hours of each test.

Nickel in its various forms was found to be the most promising catalyst for the steam-propane reaction, followed by molybdenum. Iron, chromium, and cobalt were generally less active. The sulphide forms of these catalysts were normally more active in the presence of H_2S than the corresponding oxide forms. A study of the effect of molar concentration of catalytic material to support material indicated that an optimum catalyst-to-support ratio existed. Further studies showed that mixed catalysts tended to show no improvement in activity over that of the higher activity component, but had somewhat greater sulphur-resistance.

The Parsons Oil Gas Process*

ENRICHMENT OF PRODUCER GAS AND BLUE WATER GAS

By W. K. PARSONS,

M.Inst.Gas E., M.Inst.F., Engineer and General Manager, Rhos Undertaking, Wales Gas Board

DURING many years of association with small undertakings one has been most conscious of the lack of plant available within the financial resources of such undertakings when contemplating augmentation of coal gas production in excess of that provided by producer gas dilution. Augmentation or substitution of coal gas production has in recent years become increasingly necessary —in fact, the smaller the undertakings, the greater the need.

The selling price of gas on this size of undertaking was such that it was considered it would justify a greater use of gas oil providing a method of application could be found that fulfilled:—

(i) Enrichment *in situ* with diluent gas-making units.
(ii) The financial resources of small undertakings.

From personal experience with diluent plants comprising external producer gas, blue water gas, and complete coal gasification plants certain conclusions had been reached from experiment with these units.

(i) A maintainable zone existed *in situ* by the sensible heat carried forward by the primary gas-making stream for the introduction of a limited amount of gas oil.
(ii) For any degree of utilisation the fuel mass contained in the zone had to be penetrated.
(iii) Penetration had to be by mechanical methods.

It was then considered that the employment of the type of equipment used for the injection of fuel oil into the cylinders of compression ignited engines was worthy of investigation. This equipment provided positive atomisation of light fuel oil by mechanical methods and experiment established the penetration of fuel mass. A patent has been granted covering the use of such equipment in any gas-making plant.

Enrichment of Blue Water Gas In Situ

The plant available was a small Humphreys and Glasgow blue water gas plant (automatic operator) producing 2,500 cu.ft. per hour under works conditions. It should be stated that the generator required relining and other replacements, but as it was possible the plant would be removed to another undertaking, these were not proceeded with, although it was realised the condition would generally affect results.

OIL ENRICHMENT PERFORMANCE

	Blue Water Gas Stream	Enriched Gas
CO_2	3.6	2.8
O_2	1.3	0.9
CnHm	—	4.6
CO	37.7	34.0
CH_4	4.1	9.9
H_2	35.8	40.5
N_2	17.5	7.2
Calc. C.V.	275	452
Boys C.V.	—	455
A.T.B.	7.9	20.9
S.G.	0.65	0.59
Wobbe Index		585

GAS-MAKING PERFORMANCE

Gas made hour corrected to S.T.P.	2,590
C.V. of gas ex-holder	452
Therms per gal. of oil	1.02
Oil used in gal. per 1,000 cu. ft.	2.12

Steam pressure to plant was confined to 15 lb. per sq. in. and the cycle operated was:

Blow	85 sec. or 36%
Up-run all steam	5 sec. or 2%
Down-run steam diverted upwards with oil	135 sec. or 58%
Up-run steam purge	10 sec. or 4%

The coke was from a North Wales coal carbonised in a works operating stop end retorts, hand charged, operating on a six-hour basis, and the generator was fork fed from a common run of retort weather stock.

Experiment has shown that enrichment of both up and down runs can be effected, and additionally it has been observed from the confinement of the fuel bed to the depth of fuel necessary for the production of the normal gas-making stream, thus leaving the injection areas free of fuel, a gas of higher B.Th.U. content has been obtained without increased oil input.

Tests of considerable period have been made that had the specific objects of: (1) Production of a 450 B.Th.U. gas of the consistency necessary to dispense with the use of a mixing holder; (2) oil efficiency; (3) condition of fuel bed from confinement to a total up-run make cycle. (A satisfactory condition resulting would 'open up' the construction of simple form of plant.) Fig. 1 shows an average gas-making chart.

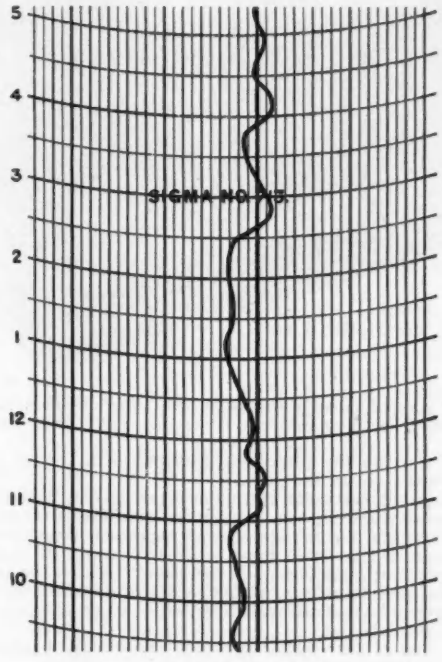


Fig. 1.

Works Operation

An exhauster, steam driven, was employed in the usual way as with coal gas production to put the gas through the purification system and no relief holder was employed. The condition of the generator feeding door and stack valve made it necessary to employ level gauge to one-tenth vacuum at the inlet of the scrubber with the usual water sealed intake. 'Cyclic fluctuations' were satisfactorily dealt with by the ordinary type of exhauster governor working on the steam engine control valve and by the bypass butterfly valve. Clinkering was confined to six-hour intervals, very little was found and the use of a clinkering bar was unnecessary. No oil has been found as such in any collected condensate.

It is found that, by the impregnation of fuel in the injection areas, an amount of oil remains that cannot be entirely purged and is available as potential heat, and

(*Continued on p. 337*)

* Patented U.K. Patent applied for Australia, New Zealand, and Eire.

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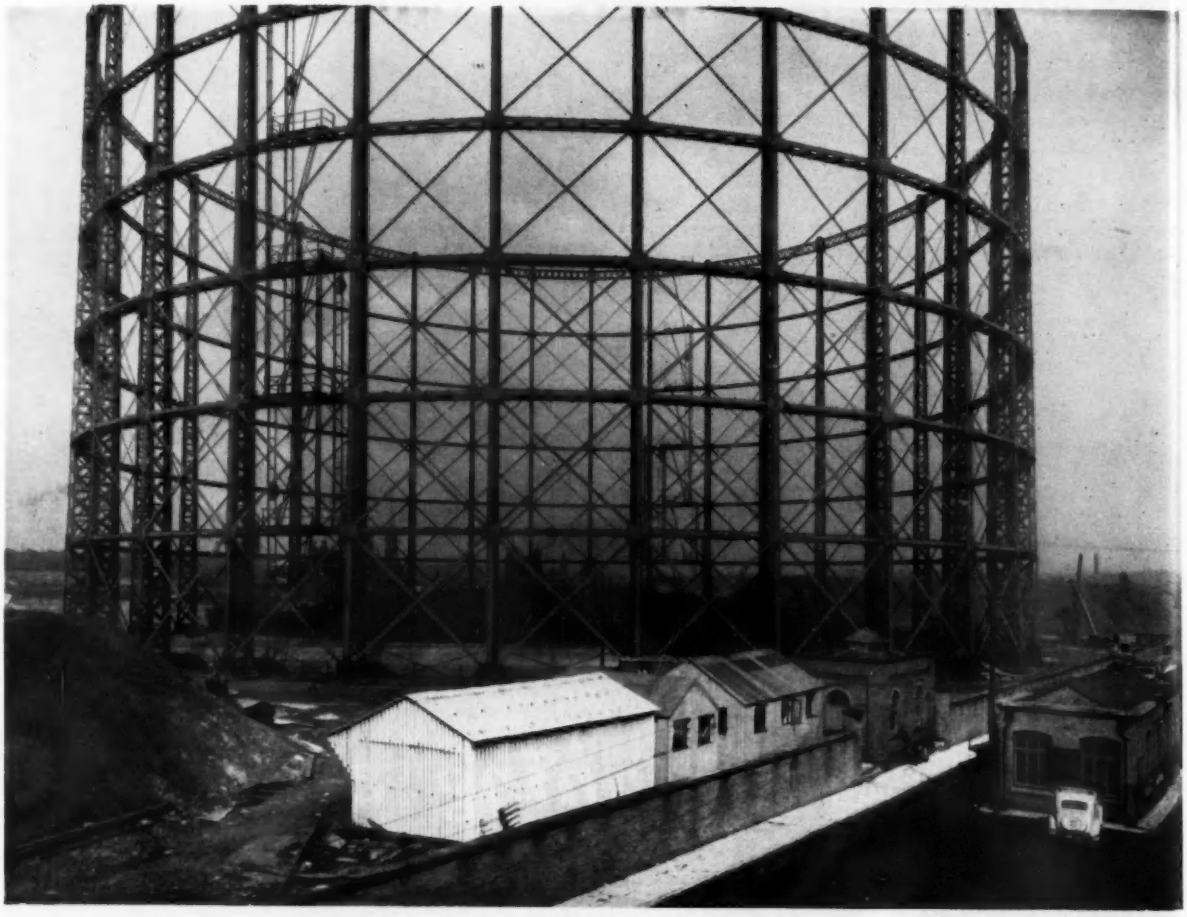

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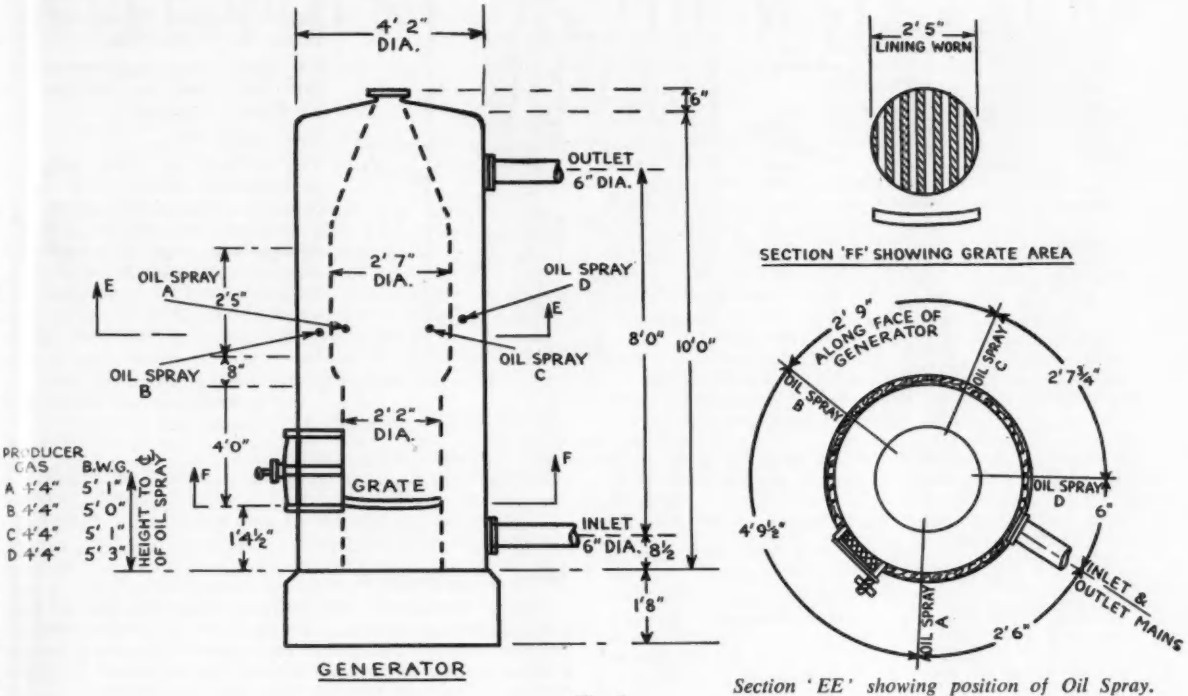


Fig. 2. *Section 'EE' showing position of Oil Spray.*

could be utilised by the introduction of a secondary air intake in the zone during the blow cycle.

In the assessment we assume the stream of coal gas to be of a quality of 540 B.Th.U. per cu.ft. in a quantity of 1,000 cu.ft. per hour to be diluted to:—

A. 500 B.Th.U. per cu.ft. by 450 B.Th.U. per cu. ft.
B. 450 B.Th.U. per cu.ft. by 360 B.Th.U. per cu.ft.
A. Approximate increased output of mixed gas over 290 B.Th.U. 47%
B. Approximate increased output of mixed gas over 290 B.Th.U. 28%

Conversion of Blue Water Gas Plant

Fig. 2 shows the area of injection; and four holes, drilled and tapped 1 in. gas, spaced equidistant, were made in the generator shell and the firebrick lining was drilled to the same size.

Specially made component parts housed the injectors, which, set to atomise at 1,300 lb. per sq. in., were screwed into the generator shell and connected by high-pressure pipe lines, size 6 mm. and 2 mm. to an oil unit, prefabricated, comprising:—

(i) Secondary oil tank (60 gal.) incorporating filter and oil-sight level glass.
(ii) Small semi-rotary hand pump, for filling purposes.
(iii) Secondary filter (duplex unit available).
(iv) Four-cylinder pump, capacity on cyclic action 8 gal. per hour. (Speed 1,000 R.P.M.)
(v) Prime mover, 1 H.P. electric motor coupled direct to oil pump with starter.

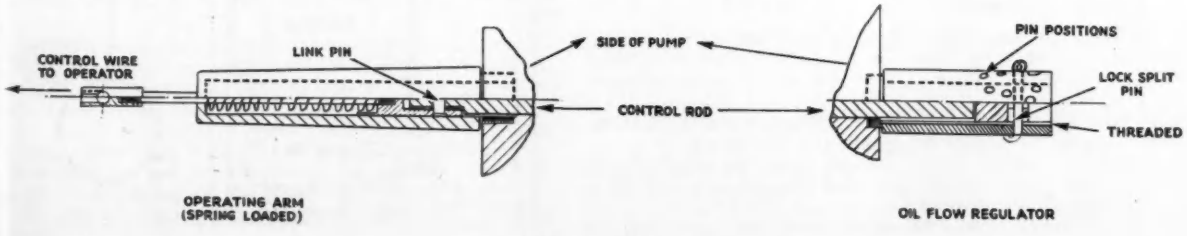
The oil equipment readily lent itself for cyclic control and was operable by a wire, 10 lb. strength, from the controlling oil input lever and fitted to the arm of the diversion or down-run steam valve controlled by the automatic operator. The steam-valve lever in the off position pulls the oil-input lever to the off position against a spring-loaded, specially constructed component part (Fig. 3) and when released the arm is returned to a position for oil input, the amount being determined by a stopper component (Fig. 4), which governs the range from *nil* to maximum.

The down-run gas valve was disconnected from the operating rod and left in the closed position and all down-run steam diverted to the up-run steam intake. This introduces a purge cycle. (The time required on the blue-water gas plant proper for conversion was 44 hours respectively for a fitter and mate.)

Enrichment of Producer Gas In Situ

It has been established that with very small producers of the type generally found on small works fueled with run-of-retort coke producing a primary steam of not less than 100 B.Th.U. per cu.ft. enrichment of 100 B.Th.U. per cu.ft. can be achieved by reducing the area of the zones of injection—namely, the secondary reduction zone by approximately 40%, thus effecting an increase in the temperature of the zone, Fig. 5.

It was decided to disregard the essential features of construction required for small producer plants and to obtain data enriching the stream of a producer plant of normal construction of the like generally employed in large gas-works practice. The blue water gas plant was used for this purpose, general conditions limiting production to 5,000 cu.ft. per hour.



Figs. 3 and 4.

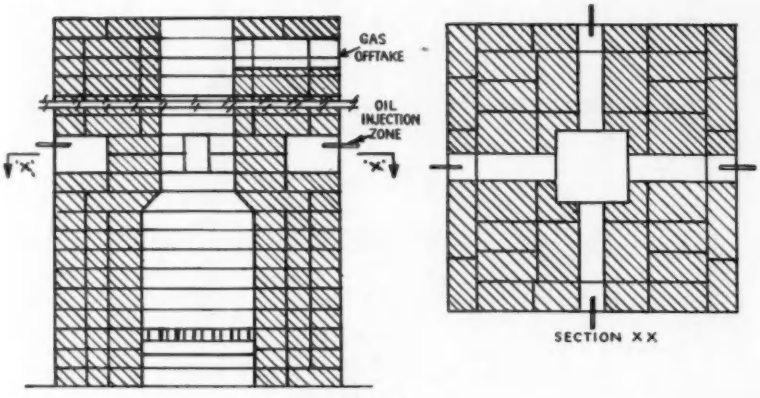


Fig. 5.

Air intake was regulated and saturated by steam from boiler to 45°-55°C. Repositioning of the oil injectors as required for producer practice, ungraded coke used for fuelling, and the exhauster was operated to put the gas through the purification system.

OIL ENRICHMENT PERFORMANCE

Gas made per hour in cu. ft.	4,570
Calorific value in B.Th.U. per cu. ft. (aggregate samples)	210
Coke used, lb. per 1,000 cu. ft. (as received) 16% moisture	20.9
Coke used, lb. per 1,000 cu. ft. (dry)	17.6
Gas made, cu. ft. per ton of coke (as received)	107,200
Gas made, cu. ft. per ton of coke (dry)	127,300
Gas made, therms per ton (as received) at 210	235.1
Gas made, therms per ton (dry)	267.3
Oil used, gal. per 1,000 cu. ft. of gas made	1.08
Volume of producer gas made, per 1,000 cu. ft. on enriched gas assuming 70 cu. ft. of oil gas/gal.	925
Volume of oil gas per 1,000 cu. ft. mixed gas	75

GAS ANALYSIS

CO_2	4.3	H_2	8.3
O_2	0.4	N_2	55.9
CnHm	2.3	Calc. C.V.	210
CO	24.8	Calc. S.G.	0.901
CH_4	4.0		

(Aggregate sample collected during test run.)

Dilution of Coal Gas by Means of an Oil-Gas Producer:

(i) In the assessment we assume the stream of coal gas to be of a quality of 540 B.Th.U. per cu.ft. in a quantity of a 1,000 cu.ft. per hour, to be diluted to 450 B.Th.U. per cu.ft.

(ii) For the convenience of calculation three streams of varying quality of dilution gas are fixed; they are: 100 B.Th.U., 160 B.Th.U., and 210 B.Th.U.

Specific Gravity Mixed Gas:

Specific gravity of coal stream, 0.420.

100	0.522
160	0.533
210	0.550

Increased Output of 450 Mixed Gas.

160	3.97%
210	8.74%

Conversion of cylindrical producer plants follows the exact procedure as for blue water gas plants except that the zone of injection is in a lower region of the plant.—Fig. 2 under producer. Oil input is controlled by the component part, Fig. 4, and the controlling wire as for cyclic action is not employed.

Fig. 6 shows a suggested layout for a producer prefabricated unit where a main oil storage tank is not available or desired.

General Summary

In present form the process has established:—

(i) Sensible heat from the primary streams of diluent gas-making plants can be utilised for oil enrichment *in situ*.

(ii) Approximately one therm per gal. of oil is obtained and is not necessarily of final attainment.

(iii) The thermal outputs of blue water gas and producer gas plants can be increased 60% to 65% and 80% to 100%, respectively.

(iv) Enrichment of blue water gas to town gas standard operable with works having a single holder.

(v) Simple and easy conversion of plants for oil enrichment.

(vi) (a) Minute steel requirements.
(b) Minute housing facilities.
(c) Distant housing.

(vii) Low capital cost.

(viii) The methods operable suggest development could bring into being a comparatively inexpensive plant, of simple design, structure, and operation, making available to small undertakings the advantage the larger type of undertaking possesses in the tactical use of carburetted water gas.

And such a plant could play a part where the substitution of coal gas production is desired.

Other possible applications include:

(i) Adaptation to carburetting and superheating vessels.

(ii) Gasification of oil by timed input in horizontal retorts for the dual production of coal and oil gas. A mobile town gas emergency plant.

Notes on Equipment

The oil equipment used was manufactured by C.A.V., Ltd., of Acton, London, and with their full co-operation a particular set of equipment was evolved for the process. For continuous oil input the equipment embraces a range of 0 to 64 gal. per hour in three sizes of pumps.

For non-continuous use the speed can be increased to 1,000 R.P.M. with a corresponding increase of oil input. Given suitable pre-treatment the makers state that no reasons exist why fuel oil of the bunkers class cannot be utilised in the oil equipment.

	Gal. per hour per cylinder continuous output	Number of Cylinders	R.P.M.	H.P. for load
Size 1	0.45-1.6	2-4 or 6	1,000	1½
Size 2	0.65-2.8	2.3-4.6 or 8	500	2
Size 3	4-8	4-6-8	500	5-7

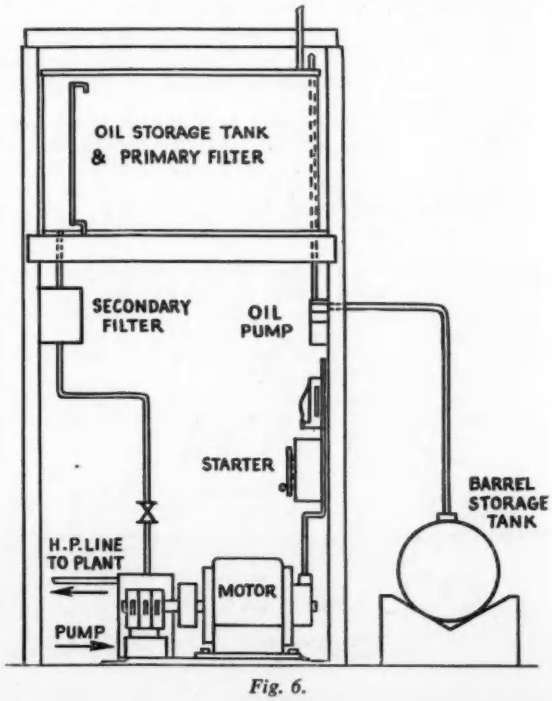


Fig. 6.

DEVELOPMENTS IN THE WALES AREA

PAPER TO THE WALES AND MONMOUTHSHIRE JUNIOR GAS ASSOCIATION BY

E. M. EDWARDS,

M.Inst.Gas E., M.I.Mech.E., Member, Wales Gas Board.

(*Continued from p. 289*)

MEASURES taken at headquarters, undertaking, and group level have resulted in the demands of all undertakings being met during the period that has to elapse before major schemes of reconstruction and of interlinking can be planned and proceeded with. This work, which has resulted in a substantial improvement in the standards of gas supply throughout Wales, has necessitated investigations into many aspects of plant operations, in order that the greatest possible efficiency may be obtained from existing plants.

Examinations into the efficiency of steam raising plants revealed that many installations were very inefficient. Probably this state of affairs developed from the fact that a number of years ago coke breeze was plentiful and low priced, and therefore steam raising plants did not receive much attention. In many boiler installations it was found that coke, or coal, was used as a fuel. Attention to steam plant operation, and to methods of steam utilisation, including the use of exhaust steam for process work, have resulted in substantial improvements, although much remains to be done. In a number of our works the generation of steam from the heat of the waste gases leaving the retort setting is sufficient for the entire requirements, and in two instances we are now selling surplus steam obtained from this source.

A broad indication of the progress that has been made in certain operational efficiencies since vesting date is indicated by the following figures:—

	1948	1952
Coal gas made per ton of coal carbonised ..	67.23 therms	68.93 therms
Coke and breeze sold per ton of coal used ..	7.45 cwt.	9.37 cwt.

An investigation is being continued into the total energy used for power purposes at all works, and the figures are being related to the therms of energy used for power per 100 therms of gas made. There are wide variations in these requirements, and there is obviously scope for further improvement. This is very important.

Major Development Plans

A summary of the capital expenditure upon major schemes is given in Table 2:

TABLE 2.

Project	Total authorised expenditure	Expenditure prior to May 1, 1949	Expenditure May 1, 1949-Mar. 31, 1950	Expenditure April 1, 1950-Mar. 31, 1951	Expenditure April 1, 1951-Mar. 31, 1952	Estimated balance of expenditure
1. SOUTH WALES EASTERN GAS GRID:						
(*a*) Mains, gasholders, and control equipment	1,815,555	257,577	1,638	199,458	300,568	1,056,314
(*b*) Extensions to carbonising and ancillary plant, Pontypool	650,000*	—	—	—	—	650,000
2. SOUTH WALES WESTERN GAS GRID:						
(*a*) Mains and control equipment	509,554	139,392	111,706	68,388	100,065	90,003
(*b*) Water gas plant, purifiers, gasholder, and ancillary equipment, Aberavon Works, Port Talbot (including site preparations and temporary fixtures)	559,000	—	—	36,151	112,848	410,001
(*c*) Reconstruction of Morriston gasworks, Swansea	500,000*	—	—	—	—	500,000
(*d*) Extensions to manufacturing plant, Llanelly	189,285	—	1,727	17,381	22,741	147,436
NORTH WALES:						
(*a*) Construction of Maelor works, Wrexham	608,956	—	1,654	95,946	250,012	261,344
(*b*) Extensions to manufacturing plant, Colwyn Bay	94,183	—	—	—	—	94,183
(*c*) Bulk supply mains and control equipment, Wrexham area	297,810	—	9,257	16,742	101,541	170,270
TOTALS	5,224,343	396,969	125,982	434,066	887,775	3,379,551

* Preliminary estimate only.

Before I proceed to refer to these schemes individually it would possibly be of interest if I referred briefly to certain of the considerations to which regard has to be paid when formulating major schemes of this character.

(i) An interchange of views with neighbouring area boards. One can visualise circumstances arising when the supply of gas by one board to another would be in the true interests of the community.

(ii) The condition, capacity, and efficiency of existing plants.

(iii) Prospective trends in the value of money—interest charges, costs of materials and labour.

(iv) Estimates of future demands. This is most difficult to resolve and, at best, such estimates can only represent reasoned judgment. They cannot be absolute. Schemes should be, as far as practicable, flexible in design so as to cater as economically as possible for the unknown future. The preparation of these estimates will include such considerations as town and country planning, new housing developments, demolition of old houses, trends of population movement, changes in the social habits of people, the requirements of existing industries and the location and requirements of new industries, and the probable competitive position and availability of alternative fuels.

(v) The availability of gas from external sources, especially from coke oven plants, oil refineries, methane from coal mines, and the possibility of the location of natural gas fields. Long term security of supplies at acceptable commercial terms is, of course, most important. The availability of coke oven gas, which is principally dependent upon demands for metallurgical coke, could be materially influenced by improvements in the technique of refining iron ore. The availability of gas from oil refineries could alter substantially by reason of changes in operational processes, and international influences cannot be disregarded.

(vi) The types and economics of gas manufacturing and ancillary plant that at present are commercially available. These would include coal carbonising plants of various types, especially coke ovens, intermittent vertical retorts, and continuous vertical retorts. Plants for the complete gasification of coal, and the manufacture of blue water gas, carburetted water gas, producer gas, oil gas, and for utilising liquefied petroleum gases also have to be considered.

(vii) The trend of investigation and research into new methods of gas production, distribution, and utilisation. Developments in the gasification of coal in hydrogen under pressure, the gasification of coal in oxygen and steam, or in a fluidised-bed system, the synthesis of methane, the availability of low priced oxygen, and the production of town gas from petroleum products are of particular interest. Changes in manufacturing methods could not only extend greatly the range of coals suitable for gas manufacture, but also they could affect considerably distribution technique and the economic distances for gas transmission. For instance, development of hydrogenation and synthesis processes could conceivably result in gas being produced from the processes at pressures of many atmospheres. As compression costs form such a substantial proportion of the overall transmission costs of

orthodox gas grid schemes, the availability of gas produced at high process pressures could have far-reaching consequences.

(viii) The availability and price trends of the raw materials required for gas manufactured is very important, and the plants should be designed so that they are not too selective in the quality or type of raw materials required.

(ix) The prospective markets for coke and other by-products, and the provision of domestic smokeless fuel.

(x) Freight charges for the handling of coal and other materials into the production station, and for taking products to the markets. Freight charges are now at a level that, in selected instances, it is cheaper to convey gas by pipeline than to transport coal. This, of course, is largely dependent upon distance and quantities involved.

(xi) The extent and density of demand, hourly, daily, and annual load factors, the relative values of steel and spun iron for mains construction, the alternative sources and costs of power, prime mover and compressor efficiencies, and the possible development of the gas turbine for compressor operation are all items of relevance.

(xii) The availability of suitable sites with good road and rail access, suitable ground strata, water supplies, electricity supplies, and facilities for disposal of effluents. The latter is becoming increasingly important to the gas industry by reason of the Effluents Rivers (Prevention of Pollution) Act, 1951.

(xiii) The economic combination of pipe sizes and pumping pressures is of major importance. For each scheme, for a given demand, there is an economic combination arrived at by assessing the capital and maintenance charges upon the transmission system and fixed plant together with the pumping costs. As this economic combination holds true only for a given rate of flow, and the rate of flow will vary throughout the life of the system, final decisions have to visualise the average conditions under which the system will operate throughout its working life.

Major Schemes

The preceding observations, while not all-embracing, will indicate certain principles that have been borne in mind in the preparation of the schemes referred to in Table 2, and in connection with other schemes that may develop.

A broad survey of the problems of gas supply in Wales leads one to the conclusion that the probable development of integrated systems, or gas grids, will eventually take place in the following areas:—

(i) One system to supply the 41 gas undertakings in Glamorganshire, Monmouthshire, and part of Carmarthenshire, extending from Monmouth in the East to Carmarthen in the West. Initially the grid is being constructed in two sections—namely, the Eastern section and Western section. The connecting link main from a point near Pontypridd to a location near Pyle would be constructed later.

(ii) A system to supply, initially, eight undertakings in the Wrexham/Deeside area, so designed that, if later considered justifiable, it could be extended to interconnect all undertakings along the North Wales coast as far as Caernarvon, thus catering for some 24 undertakings.

(iii) A system, based upon Pembroke Dock, to serve, initially, four undertakings, with the possible later extension to a further two.

In addition to the above, instances may develop of the interconnection of other undertakings, but these schemes would be relatively small in character.

South Wales Gas Grid

The estimated gas requirements for this important industrial area are given in the following tables:—

TABLE 3.

Estimated Gas Requirements in 1953, 1960, and 1970; and Actual Demand in 1948

Gas requirements	Eastern district	Western district	Total
	mill. cu. ft.	mill. cu. ft.	mill. cu. ft.
Actual, 1948	8,300	3,400	11,700
Estimated, 1953 ..	10,412	5,355	15,767
Estimated, 1960 ..	13,563	6,805	20,368
Estimated, 1970 ..	16,115	9,416	25,531

Table 3 gives the figures prepared by the Eastern and Western District Working Parties prior to vesting date and, although subsequent experience has shown that they require some modification, they broadly indicate the probable trend that could be anticipated under normal conditions with reasonable gas prices. The figures do not include for major supplies to heavy industries, and this demand in itself could be very substantial.

TABLE 4.

Estimated Annual and Maximum Daily Requirements in mill. cu. ft. at 475 B.Th.U. per cu. ft.

Year	Annual	Maximum day
1953	16,500	63
1960	20,000	74
1970	25,000	92

Table 4 gives the actual figures used, which include one undertaking (Monmouth) not included previously.

Eastern Section

This section was designed to link the 24 gas undertakings listed in Table 5, and to distribute gas supplies from the sources given in Table 6. Certain of the undertakings will receive partial supplies from the grid, and will themselves manufacture gas as required.

TABLE 5.

Abercarn	Merthyr Tydfil
Aberdare	Merthyr Vale
Abergavenny	Mountain Ash
Abertillery	Mynyddislwyn
Barry	Newport
Bedwellty	Pontypool
Brynmawr & Blaina	Pontypridd
Cardiff	Quakers Yard
Dowlais	Rhondda
Ebbw Vale & Beaufort	Rhymney & Aber
Llantrisant	Risca
Monmouth	Tredegar

TABLE 6.

Coke Ovens	
Guest Keen & Baldwins	Cardiff
British Benzole and Coal Distillation	Bedwas
National Coal Board	Coedely
" " "	Maritime
" " "	Bargoed
" " " (Phurnacite) ..	Aberaman
" " "	Nantgarw
" " "	Cwm (possibly)
Gasworks	
Pontypool	Coal gas—1st installation
	Coal gas—2nd installation
Cardiff	Coal gas
Cardiff	Carburetted water gas
Newport	Carburetted water gas
Pontypridd	Carburetted water gas
Dowlais oil plant	Carburetted water gas

Base load demands would be met by coal gas from gasworks and coke ovens, and variable and peak loads met by underfiring of coke ovens with producer gas so as to release additional coal gas, and by the operation of C.W.G. plants.

The Board has under consideration the erection of its own coke ovens.

Of the 24 undertakings referred to, coal gas is at present produced by only Pontypool, Cardiff, Monmouth, Abergavenny, Abertillery, and Tredegar.

This section involves the laying of 165 miles of mains of diameters from 18 in. to 6 in.; 102 miles have been laid, including 41.4 miles laid before vesting date.

The mains system will operate at pressures of up to 25 lb. per sq. in. Mains are constructed largely of spun iron pipes of B.S.S. Class B, with bolt type flexible joints, but steel pipes of B.S.S. Class B are used where the larger diameter mains are laid through built-up areas, for special crossings, and where mains are laid above ground. The joints of steel mains are principally welded, with Johnson couplings installed at intervals to provide flexibility. Valves are of the lubricated plug type.

Meters are of the Connersville or B.M. positive displacement types, but experimental work is being carried out on the suitability of orifice type meters. Supplies to gasholder stations are controlled by variable volumetric governors. Where necessary, stations will be fully automatic.

Consideration is now being given to the central control room arrangements which may provide at the control room for the remote control of flows, gasholder stocks, and grid pressures throughout the system. Final details have not yet been settled and thought is being given to the

extent to which short-wave radio could advantageously be employed.

The geographical features of the area presented certain constructional problems, such as the crossing of 40 river and rail bridges to date, and the laying of mains across hills and mountains. One such section of 1,500 yards of 14 in. steel main laid above ground is provided with expansion loops to deal with wide temperature variations.

Western Section

The Western section can be regarded in two stages, the first being that part authorised, and the second part planned but not yet authorised. Consideration is now being given to the second part, but final decisions have not yet been made.

The 17 undertakings included in this section are:—

TABLE 7.

Bridgend	Mains completed
Porthcawl	" "
Maesteg	" "
Port Talbot	" "
Glyncorrwg	" "
Neath	" "
Pontardawe	" "
Swansea	" "
Ammanford	Authorised
Garw and Ogmore	Additional main not yet authorised
Gowerton	Not yet authorised
Pontardulais	" " "
Llanelly	" " "
Kidwelly	" " "
Carmarthen	" " "
Llandilo	" " "
Tondu	" " "

The sources of supply to the undertakings connected to the grid are:—

TABLE 8.

Steel Company of Wales	Coke oven gas
N.C.B. Tondu coke ovens	Coke oven gas
Swansea gasworks	Coal gas and C.W.G.
Neath gasworks	Coal gas and C.W.G.
Port Talbot	Producer gas, also new C.W.G. plants under construction.

The Tondu coke ovens have a relatively short effective life, and it is anticipated this supply will cease in 1957.

Additional gas manufacturing plant of 6 mill. cu.ft. per day capacity is under construction at Port Talbot gas undertaking, and the Board has preliminary plans for the installation of new plant at Swansea. Extensions are also planned for Llanelly. Final decisions in respect of the Swansea and Llanelly projects will be affected by the results of current negotiations for the purchase of additional quantities of coke oven gas from the Steel Company of Wales, Port Talbot.

The complete scheme involves the laying of approximately 135 miles of mains of 24 in. to 6 in. diameter. Of 75 miles of mains authorised, 62.5 miles have been laid.

The engineering features of the scheme are generally similar to those of the Eastern section, with the exception that it is proposed that the mains west from Llanelly shall be steel, and that the gas to supply that part of the system will be recompressed at Llanelly.

Work is substantially advanced upon the reconstructed Aberavon gasworks, Port Talbot. The project includes the extension of the site to 17 acres by reclaiming a lake for which 220,000 tons of filling was required.

The first stage of development incorporates the following plant:—

Two 3 mill. cu.ft. per day carburetted water gas plants, suitable for gasifying coal or coke, and for reforming refinery gas. These plants are complete with annular steam boilers, generators, carburettors, superheaters, and waste heat boilers.

Two Economic type boilers, each of capacity of 9,000 lb. of steam per hour at 150 lb. per sq. in. with mechanical grates, and superheaters.

One rotary wagon tipper, with traversing skip hoist for handling fuel to C.W.G. plants and boilers.

Two sets of reinforced concrete purifiers, each set being of 5 mill. cu.ft. per day capacity with 5 boxes in each set, and each box 35 ft. by 35 ft. by 9 ft. deep.

Gas cooling plant, electrostatic detarrers, and Connersville meters for coke oven gas, carburetted water gas, and purified mixed gas.

Three gas compressers, each of 218,000 cu.ft. per hour capacity at 20 lb. per sq. in., two being dual fuel engine driven, and the other steam driven with exhaust steam to be used for process work.

One 3-lift spiral guided gasholder of 1.5 mill. cu.ft. capacity, in steel tank, of all riveted design.

One calcium chloride gas drying plant.

The site and buildings are laid out for duplicating the effective capacity of the above, and for the installation, if required, of coal gas production plant of 10 mill. cu.ft. per day capacity.

The present purpose of this works is to purify large quantities of coke oven gas supplied by the Steel Company of Wales, and to supplement this supply with carburetted water gas, this station being the principal source of gas supply to the Western section of the grid.

A separate scheme is being examined for the distribution of substantial quantities of refinery gas from the National Oil Refineries, Llandarcy. This would involve the construction of a separate system for its direct distribution to large industrial users, and to gasworks for reforming purposes.

North Wales

The schemes already authorised for North Wales include:—

(i) The construction of a complete new gasworks at Maelor, near Wrexham, to supply initially: Llangollen, Cefn Mawr, Rhos, Wrexham, Mold, Buckley, Hawarden, and Holywell and Flint.

(ii) The interconnecting of the Rhyl and Prestatyn undertakings.

(iii) The supply of St. Asaph in bulk from Rhyl.

(iv) The supply of Conway in bulk from Llandudno and Colwyn Bay.

(v) The supply of Bethesda, Menai Bridge, and Beaumaris in bulk from Bangor.

Details are being prepared for a scheme to utilise 900,000 cu.ft. of methane per day from Point of Ayr colliery. The gas contains 98% methane, has a calorific value of 982 B.Th.U. per cu.ft., and is sulphur free. Alternative methods of dealing with the gas are being examined. These include the possible distribution of part of the gas neat to one district, which would involve the installation of a standby liquid petroleum gas/air plant for emergency purposes. More probably, the gas would be utilised for the cold enrichment of blue water gas, and at periods part of the gas could be reformed in these plants. Alternatively, the economics of catalytic cracking are being examined.

Concurrently with the above, an examination is being made of the economics of extending the grid from Wrexham to Caernarvon. If this should develop the grid would be served by two gas-producing stations and one methane treatment station. All the development work now in hand is planned so that the sections will later fit in with a major scheme.

Sixty-two miles of interconnecting mains of diameters 14 in. to 4 in. have been authorised. In the event of the major scheme being developed, approximately a further 70 miles of main will be required to complete a grid transmission system of about 132 miles.

All grid constructional work sanctioned to date for pipelines north of Wrexham is of steel, B.S.S. Class 'B,' as the economic pumping pressures for this scheme will eventually be above the safe limits of spun iron, and the system would have greater flexibility to meet increased demands that cannot now be foreseen.

The new Maelor, Wrexham, works occupies a 27-acre site, laid out for future extensions. The first stage incorporates an installation of intermittent vertical chamber ovens of 2½ mill. cu.ft. per day capacity with waste heat boiler, together with two carburetted water gas plants of a total capacity of 1½ mill. cu.ft. per day. The works will be brought into commission this summer.

(To be continued)

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London and Counties Sales Circle

Increasing the Popularity of COKE SALES

FIRST PRIZE WINNING PAPER IN THE SIR JOHN CHARRINGTON COMPETITION

by R. F. KNOWLDEN,

Coke Officer, Bristol Sub-Divison, South Western Gas Board.

HOW can all who are interested in the production and distribution of coke make it more popular with the public? The problem is undoubtedly urgent, particularly at the present time when coke stocks are showing a greater tendency to become embarrassing in many districts and our consumers, actual and potential, are becoming ever more price conscious. Every consideration, therefore, must be given to the problem of building-up a greater coke consuming public. More gas coke is being made, more coke will be made, and more coke must be sold; but that is not enough. Far too much coke today is being sold in what are virtually substitution markets and we should indeed be guilty of living in a fools paradise if we imagined that these temporary outlets will continue indefinitely. Our task is to sell more coke to many more consumers and thus achieve a greater and more stable coke market. What can be done to achieve this task?

The steps which can be taken by producers and merchants individually and collectively may be divided into two categories—the immediate steps and action which can be described as long term.

Immediate Steps

Without doubt the coke market has now become a buyers' market in contrast to the war and post-war years when demand was usually in excess of supply. With this change there is a need to revise the present policy relating to advertising. We must now seek the consumer, for we cannot depend upon the consumer seeking us. Some coke advertising admittedly is being done, but coke must be brought to the attention of the potential consumer to a greater degree and this indicates more advertising and publicity and organised planning to get the utmost value out of such increased publicity. The following methods are suggested.

Attractive layouts advertising coke should appear more regularly in the national daily papers, in the weekly periodicals, and in those magazines which have particular interest to women. Similar insertions should appear at regular intervals in the local daily and weekly papers. In these cases the local coke distributors' branches might consider it well worth while to have advertisements in the local Press from time to time giving publicity to coke.

The importance of striking posters cannot be over-estimated, and probably one of the most attractive recently produced by the Gas Council was the one with the slogan 'Cosy with Coke.' Efforts should be made to see whether more of these posters or others of similar quality could be more widely displayed. Folders or leaflets in attractive colours should be designed by producers showing the types of gas coke grates—all on one folder—sold in the locality and should be given the widest possible distribution. Distributors can assist to their advantage in the distribution of these folders.

Despite the fact that manufacturers supply instruction cards of their own design, there is real evidence that many purchasers of coke grates do not read or study them as they should. If, because of this, difficulties are subsequently encountered, there is the real danger that coke may be unfairly blamed and the consumer use another fuel. The suggestion is made, therefore, that an instruction card should be designed showing plenty of colour, and emphasis should be on pictorial illustration of the correct usage of the appliance using as few words as possible. This would be in contrast to the existing instruction cards —mainly in black and white—containing too many words, and, of course, with our own cards the opportunity arises of underlining the importance of using coke. These instruction cards could also be supplied to merchants for distribution to their own consumers. Similarly, instruction cards showing pictorial representation of the use of coke could be designed for the domestic boiler market.

In addition to a wider publicity in the Press and improved literature with a greater distribution, it is essential that more thought be given and more energy directed in displaying coke and coke-burning appliances, not only in the showrooms of gas service centres but in merchants' order offices and show windows.

A gas coke grate should be shown burning coke in every showroom where possible, even if this involves some expenditure in arranging for the flue problems to be overcome. The money spent will not be wasted and it will be invaluable in helping the staffs of showrooms to demonstrate the use of coke. The larger showrooms, of course, already have these active or 'live' displays, but there are many of the smaller gas service centres where this does not apply. In addition, while a number of coal merchants demonstrate fireplaces using coal, very few of them appear to use coke in a similar manner. There appears to be considerable scope for distributors to increase coke publicity among their own consumers by burning coke in an approved appliance.

Education

While it is admitted that a number of producers and some distributors to a greater or lesser degree have set up departments to handle and foster coke sales, it must be conceded that the numbers directly and mainly employed in coke marketing are comparatively few. When, as in the case of gas undertakings, we consider the widespread organisation which has been built up in the past decades to market gas and which is rightly termed gas service, or we appreciate the numbers employed by the coal distributive trade who are mainly or wholly concerned in marketing coal, we must be agreed that there is a long road to travel before we—producers and distributors alike—can provide a coke service commensurate to the importance of coke. In the circumstances, those whose duties are to be considered mainly related to gas or to coal should be encouraged to become more coke conscious until more adequate organisation is available to concentrate or specialise in coke marketing. Since personnel who are concerned with distributing and selling gas or coal are in such close contact with the public there appears to be a very wide field for promoting greater coke sales by getting them more interested in coke.

Courses of lectures should be arranged to create interest in coke matters and should be attended by showroom gas salesmen, district gas salesmen, home service staffs, canvassers, fittings foremen, weighbridge clerks, and others in the gas industry whose work brings them into contact with the public. In addition, these courses, by invitation, could be thrown open to members of the staffs of distributors such as outdoor coal salesmen, coal travellers, and order clerks.

Many merchant distributors are aware of the excellent work which has been carried out by the C.U.C. in their lectures and courses describing the different types of modern appliances; those of their staffs who have studied this information have undoubtedly benefited. A part of

the proposed coke course should include knowledge of solid fuel appliances which in the opinion of the gas industry can use coke satisfactorily. This should be of interest not only to gas staffs but also to distributors, particularly in view of the fact that the standards of the gas industry are not necessarily those of the C.U.C.

To persuade a coal consumer to become a coke consumer requires a combination of knowledge of coke, the appliances which can use coke, keenness, commonsense—not all appliances can use coke properly—and an awareness or curiosity which is the hallmark of the true salesman. By curiosity is meant the gift of perceiving an opportunity or a possibility of obtaining a new consumer when there has been no initial enquiry from the consumer. The gas salesman selling a gas appliance whether on the district or in the showroom, the order clerk taking an order for coal or the distributor dealing with an enquiry unrelated to coke may, by tactful questions and carefully phrased suggestion, initiate in the mind of a consumer using coal in an appliance capable of using coke, the idea of trying coke instead. This endeavour to sow the seed as a sideline, so to speak, of one's normal duties need not be confined to the domestic solid fuel user.

If the merchant distributor is to foster coke sales he must feel that he will be properly recompensed. Insofar as coke margins are concerned, much of the criticism expressed in the past may be removed when the new zonal price scheme comes into operation. Mention has been made, however, of the idea that distributors should recommend their consumers to install coke burning appliances, and in this connection it is natural that the merchant would require to receive an incentive. The suggestion is offered, therefore, that a scheme should be organised on a wide scale whereby coke-minded merchants pass to the producers enquiries for coke grates received from their coal consumers. The producers would then carry out the necessary inspection, give the required advice, and when the definite order was obtained, supply and fit the appliance and finance the transaction on hire purchase if required.

In addition, the producer would pay a commission to the merchant for each enquiry resulting in an approved sale. To assist the merchants, displays of appliances could be loaned by producers to merchants for their order offices and the necessary stationery needed for the working of the scheme also supplied free of charge. If such commission, for the sake of argument, amounted to 7s. 6d., the distributor could offer one-third to his staff as an inducement to provide interest in obtaining these enquiries. Arrangements would also be necessary to determine that every effort was subsequently made to see that the consumer who had an appliance installed by the producer as a result of a recommendation from the merchant, was afterwards encouraged to burn coke. Apart from the gas coke grates, the scheme could be extended to cover the complete installation of gas power burners for boilers and coal fires.

Co-operation with Traders

On the widest possible scale there should be appointed agents, among hardware stores, etc., to sell appliances on a commission basis for the producers. The latter would be responsible for the supply and fitting of the appliance, the financing (on hire purchase) and subsequent after-sales service. This proposed function of the appliance traders would in no way interfere with their own trade, but would be additional to it and provide an extra source of revenue to them. The result should be an increase in the sale of appliances and a subsequent widening of the field in which coke could be used satisfactorily. In this latter, undoubtedly the merchant distributors would reap benefit by sharing some of the new business accruing from the increased demand for coke.

Producers and merchants have probably regarded solid fuel cookers from different aspects. While the merchant regards the solid fuel cooker as another outlet for business the producer has probably given too much emphasis to the fact that this appliance is a competitor of the gas cooker. Nevertheless, most solid fuel cookers can use coke, and whether regarded from this point of view or whether as a competitor of gas it does appear desirable that home service staffs of producers should obtain more experience of the use of solid fuel cookers. In this way questions put by the users of these appliances could be answered with greater confidence and knowledge. The market is a growing one particularly in rural areas and, once installed, the cost of the installation is such as to preclude any possibility of selling a gas cooker in lieu for a long time. There should be courses of instruction arranged for home service personnel in order to make them more familiar with solid fuel cooking technique.

Revenue and Effort Un-related

The attention given to coke should be relative to its revenue-earning capacity. Too often has the coke salesman felt that everything has been subordinated to gas production, with the result that opportunities for developing stable markets have had to be lost. Can we not hope that one day the gas industry becomes in truth a gas and coke industry wherein gas coke is given an importance approaching that which is received by hard coke in the hard coke industry? Policy is not only a matter for producers but needs to be considered by distributors. There are many merchants who are coke minded and who have played a worthy part in fostering coke sales. There are others, however, who regard coke merely as a makeshift substitute to be retailed when other fuels are scarce. To obtain a stable market coke can no longer be carried along in the wake of coal. Coke must stand on its own feet as a solid fuel and merchants who have been lukewarm or indifferent towards coke must really give greater consideration to its marketing. Otherwise they may well find themselves devoting too great a portion of their energies to developing the sales of other solid fuels becoming increasingly scarce and find that, meanwhile, the coke-minded distributors have scooped the pool.

A problem which merits much consideration relates to complaints received of coke 'spitting.' These complaints are probably the worst which the coke salesman has to face and any research at national level or otherwise which will help in the mitigation of this nuisance will reap big dividends in assisting to establish a more extensive domestic demand for coke. Accuracy of sizing is becoming more important and there is need for greater standardisation of sizing. Continuity of supply of the size to which the consumer is accustomed is necessary if satisfaction is to be maintained. Also, there is need for further investigation into the use of horizontal coke in modern open fires.

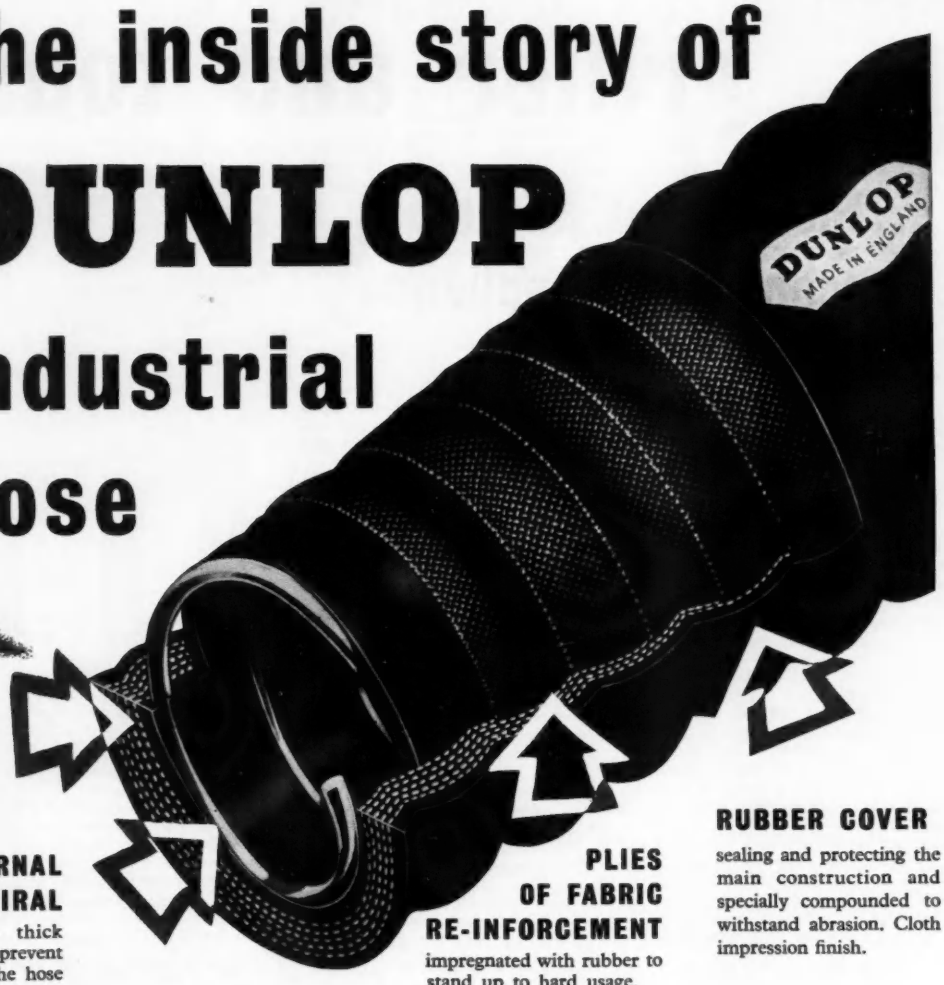
Then there is the need to approach more realistically the question of providing adequate stocks to meet demand. Such stocks must not be laid down in the form of ungraded coke; otherwise at peak periods there may be little opportunity of reclaiming the coke sufficiently quickly to avoid orders falling in arrears. Admittedly there has been little difficulty this winter, but in the past there have been occasions when stocks have been reduced by the beginning of a winter to a dangerously low level very often by dispersal to substitution markets during the preceeding summer. This has sometimes led to coke consumers being deprived of adequate supplies in the winter with a consequent loss of goodwill and possible loss of markets.

Co-operation with Appliance Manufacturers

Good work has been done in this connection by the Appliances Sub-Committee of the Gas Council Coke Department; yet, if more could be done in this respect, undoubtedly further outlets for coke could be secured. An important point which needs prosecution to the fullest extent is the need that firebars for modern grates should have the $\frac{1}{8}$ in. $\pm$ $\frac{1}{16}$ in. spacing when they are intended for use with coke. If necessary, the industry should bring greater pressure to bear upon appliance manufacturers to make separate firebars for coke, and these appliances should then be marketed as gas coke grates. This was done in pre-war days and there is no good reason why it should not be done today. The difficulty, at present, is that test-bench standards tend to be accepted by many as standards of performance in consumers' houses. As a

(*Continued on p. 348*)

The inside story of DUNLOP Industrial Hose



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The griller is strongly constructed of cast iron, with heat-conserving insulation between the outer casing and interior lining.

It is available with or without the stand shown in the illustration. Overall size is 28" wide x 23½" high x 26" deep and the grill opening is 24" wide x 9" high x 19½" deep. The stand is 34" high.

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I.G.E. Discussions

Written Contributions to Papers

Comm. No. 424—'Special Aspects of the New Swan Village Gasworks.' S. K. Hawthorn.

Mr. T. Andrews (Liverpool): The idea of the all-electric gasworks has been frequently referred to for some time. It would appear that in the Swan Village scheme these ideas have been carried further than they have anywhere else. Mr. Hawthorn and his staff are therefore to be commended on their energy, resource, and courage in pursuing this development. There are, however, a few points which need some comment.

Firstly, the boiler feed pump arrangement seems to be somewhat over-cautious, not to say uneconomical. It would surely have been sufficient to have installed two pumps, one electrically and one steam-turbine driven. Should it have been found after operating experience that the electric supply to the pump motor was completely reliable, then the steam-turbine driven pump might have been replaced by a duplicate electrically-driven machine. This would, I think, have been quite simple, as in most of the arrangements of this kind the pump ends of the units are identical.

Secondly, no mention is made of the boiler feed regulation. It would be interesting to know whether the electrically-driven feed pump is fitted with a scoop control fluid coupling, of which there are many in the works, as this arrangement is an admirable application of fluid couplings, being particularly valuable at part load working.

The method adopted to avoid condensation loss in low pressure mains is particularly interesting, as we, at Liverpool, have been working along identical lines. In connection with the de-superheating arrangements, it would be valuable to know the temperature of the distilled water supply to the de-superheater sprays, as there seems to be doubt in some quarters whether water at, say, 100°F. is suitable for duty in de-superheaters of this kind.

With regard to the blow-down arrangements, would the author say whether recovery of blow-down as low pressure steam was considered at any stage, as this may in some cases have advantages over the arrangement described in the paper? The choice of steam conditions for power generation schemes is usually a matter for compromise, as only rarely will the conditions theoretically necessary for power/steam balance be realisable. Could Mr. Hawthorn say what factors influence the choice of 350 lb. per sq. in and 650°F. for the high pressure steam? From rough calculations, it would appear that when the straight condensing machine mentioned is installed the exhaust wetness in the final stages might be excessive, particularly if full advantage were taken of the low temperature of underground water supplies and the high vacuum thus made possible. The wetness will, of course, depend upon the size of the machine and the corresponding internal efficiency. Was this point considered? Can Mr. Hawthorn also say whether the space available for superheaters influenced the choice of final temperature?

I was particularly interested to note that it was decided to install electrically driven coal gas exhausters, as there seems to be considerable reluctance in the industry generally to take this step. What are Mr. Hawthorn's views on the reliability of this means?

Comm. No. 427—'The Functional Design of Gas and Coke Burning Appliances.' N. Hudson, M.B.E.

Mr. G. Ewart (Ewart & Son, Ltd.): Mr. Hudson recommends as a means of providing the domestic hot water supply during the 20 weeks of the year the solid fuel heater is out of use the installation of a specially designed gas-fired heater to be fitted in the grate to heat the saddle-back boiler. In other words, this gas appliance, as an alternative to the solid fuel consumer in the grate, will be called upon during these weeks in the year to heat up and maintain the temperature of the water in the hot tank via the flow and return pipes. The initial efficiency of 50% seems high for an appliance of this type and from this figure there has to be deducted the loss of heat by way of radiation from the flow and return pipes and the hot tank amounting, on an average, I would say, to not less than 15%, bringing the working efficiency of the appliance down to not more than 35%. Apart from this very low efficiency and the consequent high cost of fuel, there is the factor of practicability in use. Is it convenient, practicable, or economic to be compelled, in order to obtain a hot bath, to heat up specially some 30 gal. of water in the tank with all the delay that is involved?

Dr. H. A. Blum (Ewart & Son, Ltd.): I fully appreciate Mr. Hudson's effort to present a realistic picture of future design requirements, but I feel that his comparison as regards water heaters does not give a true picture of present conditions and future possibilities. The author allows 50% bench efficiency for the back-boiler unit and an actual working efficiency of 44%, and he seems to assume that it is possible to heat just 15 gal. by 60°F. Actually, the bench efficiency would be nearer 40%, the working efficiency nearer 30%. Also, as the ordinary domestic tank has virtually no stratification and only part of its contents can be drawn off at a useful temperature because of the mixing with the incoming cold water, we shall have to heat, say, 25 gal. to obtain our required 15 gal. The practical efficiency for a single bath will be desperately low, and, even if several baths are drawn in sequence, I should not like to guarantee above 25% to 30%.

Again, Mr. Hudson sets this against the 49% efficiency of a circulator. In the South of England I think it would be more realistic to set it against the 70% (approximately) of an instantaneous heater, noting well that this will provide a single bath with the same efficiency, and will provide it without any preparation or waste whenever required. Assuming five baths per week at 9,000 B.Th.U. this would result in a back-boiler consumption of 1.5 therms, against 0.65 therm instantaneous water heater consumption, or at average domestic rates a saving of 18d. per week. If more hot water is used, this saving will grow in proportion and should offset appreciably the deterring effect of the higher installation cost. May I suggest that, where the saving would pay for the higher capital cost within a reasonable period, it would be sound policy to try to sell the instantaneous bath heater in preference to the conversion set.

I should also like to refer to the problem of the sink heater, which, in spite of Mr. Hudson's deductions, has been very popular and would still be so if it had not been smothered by the cumulation of purchase tax, hire-purchase restrictions, and a near prohibition of selling through the gas boards. An open type sink heater needs little heating up, and its contents are drained fully, leaving little residual heat. The 'practical efficiency' is therefore nearly doubled for the two-point draw and can be taken as approximately 70% for all practical applications.

Of course, efforts should be made to provide cheaper and simpler appliances, and we should trust the user with a modicum of common-sense. I should not like to lower the essential technical and safety standards, and we ought to maintain the basic virtues of gas water heaters, especially their adaptability to varying conditions of usage.

Comm. No. 429—'Operation of the "Manchester" Liquid Purification Plant at Linacre.' L. G. Townsend.

Mr. H. G. Cooper: Being the pioneer of the 'Manchester' process (B.P.'s 550272 and 611917) as it was originally developed at the Droylsden gasworks, I would comment on Mr. Townsend's competent and concise report of the further development of the process as installed at the Linacre works.

Having been actively interested in the problem of liquid purification for something like 12 years, my own conclusions lead me to believe that the future of liquid purification depends upon the following factors:—

(i) The cost of pumping, aeration, chemicals, and control.
(ii) The supply and demand of labour.
(iii) The net revenue from the products.
(iv) The effluents with which one has to deal.
(v) The reliability of the process.

Taking these factors in the foregoing order, we have the normal operational costs. From experience it has been found that high recirculation rates are essential and must be maintained, but I was astounded to learn that for effective oxidation an air volume of 30% of the gas throughput was necessary, whereas at Droylsden, depending upon the method being experimented with, the air/gas rate was in the order of 4% to

10%. This alone can account for something possibly in the order of 20% reduction in power costs.

Further, in regard to the operational costs, I would refer to the use of soda. Why is this costly alkali employed when ammonia is available at little or no cost? I appreciate that with excessive aeration the ammonia loss from this source may be such as to prevent the use of this alkali—another reason for attaining the efficient oxidation for the suspension.

Regarding the second item, if liquid purification is to cost more to operate than dry boxes, then it would appear, unless the labour market is such that it is impossible to operate dry boxes, the older method will survive the later 'improvement.'

This brings us therefore to the third item, the net revenue from the product. The product obtained directly from the plant and dried does not appear to have a sulphur content more than 90% to 95% and as such can scarcely command a good price to offset the high cost of the raw material—*i.e.*, copperas as a source of reactive oxide of iron. Therefore, if one is to make full use of liquid purification, the product should be a high quality sulphur.

Coming next to the point of the effluents from the plant, Mr. Townsend has indicated the large amount of thiocyanate which finds its way into the drainage system. This, in these times, can be a serious drawback to such a plant, but from the writer's own experience it is easily possible to install a cyanide washer previor to the purification plant and so reduce the noxious effluents. It must, of course, be emphasised that the purification system which is practised would have to be more along the lines of the 'Manchester' process as developed at Droylsden and not quite so similar to the Otto-Dutch State Mines or I.C.I. Auto process which depended mostly on a suspension/solution of complex cyanides.

Lastly we may consider the reliability of the process. In view of the necessity for maintaining at all times a high circulation rate in view of the stringent Gas Referee's test for H_2S, one of two alternatives must be adopted. Either the plant must be designed with very large margins for oxidation and must be so instrumented and designed with dual power supplies that even a temporary shut-down of even seconds duration does not occur, or alternatively the principle adopted on the Continent and in America of employing a reactive oxide catch box must be installed, in which case the instrumentation and the safety margin of the liquid purification plant can be reduced enormously, so reducing the original capital cost for the liquid purification to, say, less than one-quarter of the highly instrumented plant.

In my experience particles, presumably of complex hydrocarbons, can pass forward through the liquid purification plant, and these were found to stain lead acetate paper where this had been touched by hand, and in addition therefore to the safety margin offered by the reactive oxide dry box catch the other important advantage would be the filtering of the gas before this goes on to the town supply.

CONSERVATION OF RAW MATERIALS

RESEARCH ORGANISATIONS in Great Britain and the principal European countries are working on the problems of conserving such raw materials as metals, fuels, chemicals, and textiles which are scarce. The work being done includes the discovery of methods of economising in the use of the materials, the provision of adequate substitutes, the recovery of waste materials, and the protection of materials liable to be attacked by corrosion or decay.

It is not always easy for an enquirer on these subjects to discover all the sources of information on the problem in which he is interested. A list of sources on a wide range of subjects has now been collected by the Sub-Committee for Co-operation in Scientific Research and Technical Development of the O.E.E.C.

BRITISH STANDARDS

THE 1953 EDITION of the British Standards 1953 Yearbook has just been published and gives a list of the 2,000 British Standards current at the end of March, 1953, with a brief description of the subject matter of each. A comprehensive index simplifies reference. The *Yearbook* gives the usual information on the membership of the General Council, the divisional councils and the Industry Standards Committees, together with the names of the representatives on the main special committees and advisory committees.

For the first time the *Yearbook* gives a list of the British standards under which the Institution's certification trade marks are used, while particulars of the work in hand of all the Industry Standards Committees are also given. Copies may be obtained from the British Standards Institution, 24, Victoria Street, London, S.W.1, price 12s. 6d.

COAL MERCHANTS' MARGINS

THE COAL MERCHANTS' FEDERATION of Great Britain, commenting on a demand by the National Union of Mineworkers for an inquiry into the gap between the pithead and retail prices of house coal, has declared that if a scapegoat were required for the present price of coal, it would not be found in 'the outworn bogy of the coal-merchants' profits.' Actually, the pit price of medium-grade house coal is today about 65s. a ton (excluding the summer reductions and the winter increases, which roughly balance out). This is approximately three times what it was before the war. The average railway charges to the merchants' depots vary according to the distance the coal has to travel—in Leeds, to take a city near the pits, about 8s. 6d. a ton, in London about 30s. a ton. These charges are more than double pre-war.

To the pit prices and railway charges (which account together for 75 to 80% of the retail price) have to be added the merchants' distribution costs and profit. These are rigidly controlled by the Ministry of Fuel and Power, which fixes the maximum retail prices. The amounts allowed by the Ministry to cover distribution costs also vary in different areas.

The statement added that on top of these costs the Ministry allowed merchants to add only 1s. 6d. a ton (less than a penny a bag) from which to pay tax and other expenses, and find a profit. As was to be expected, the merchants contend that this sum is quite inadequate.

COKE SALES—(continued from p. 344)

result there are a number of appliances with firebar spacings too narrow for the satisfactory use of many cokes but which, nevertheless, are described by the manufacturers as approved for burning coke.

Apart from a limited number there have not been as many appliances specially designed for burning gas coke as one would wish. Having regard to the greater availability of gas coke, therefore, there does appear to be room for increased encouragement to be given to appliance manufacturers to produce more appliances such as the 'Janitor,' 'Cokette,' etc. The suggestion is made that a worthwhile money prize be offered by the industry for the most suitable type designed over a period of several years. The interest aroused might be considerable and eventually lead to a much greater demand for coke.

Handling and Bagging Facilities

To make more coke and to find a wider market particularly in the domestic field are not sufficient in themselves. Regard must be given to the availability problem, especially at peak periods. In this respect there is a demand for increased bagging facilities at many works to offset transport delays arising from congestion of vehicles at the gasworks. Not only does this involve consumers being kept waiting for coke, which is bad service, but there is also the heavy expense to both producers and distributors because of the reduction in turnover for each vehicle. A number of modern works provide adequate bagging facilities but in other cases more recourse could be had to mobile bagging units, to the subsequent advantage of producers and distributors alike.

As a long term policy some educational scheme should be prepared comprising courses of study, with the subsequent granting of a Diploma in Coke Sales to those staffs of producers and distributors who had shown the necessary interest.

Inducement or Incentives

The question of giving commissions for encouraging sales of coke is a difficult one and presents many problems. Nevertheless in the case of those whose duties are not directly connected with sales of coke or coke appliances there is a very good case for commissions in order to provide an incentive for a wider circle of employees of gas boards to become more interested in coke.

The steps suggested, both immediate and long term, may be subject to differences of opinion. Nevertheless the issue is a serious one. If coke is to be made more popular, a fundamental change in outlook is required.

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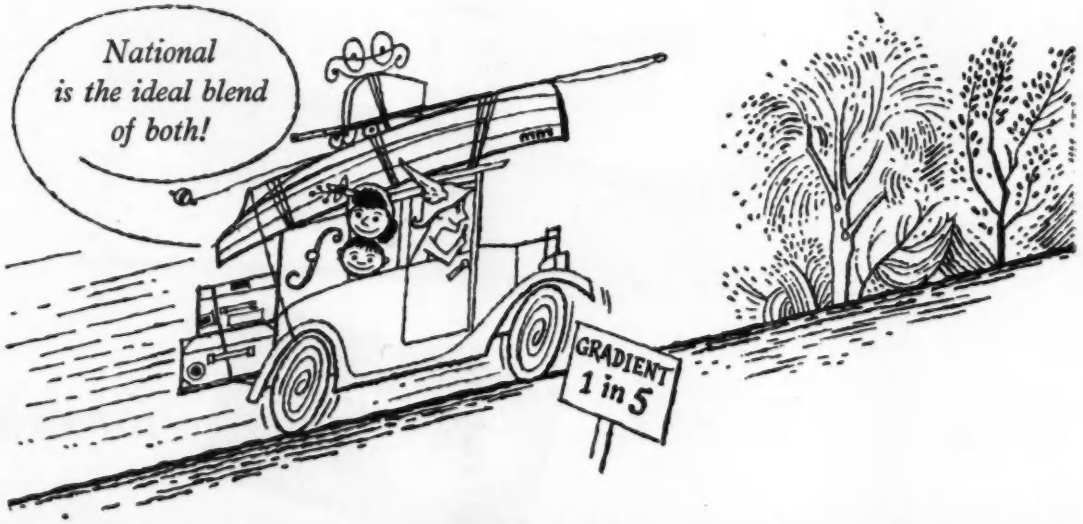

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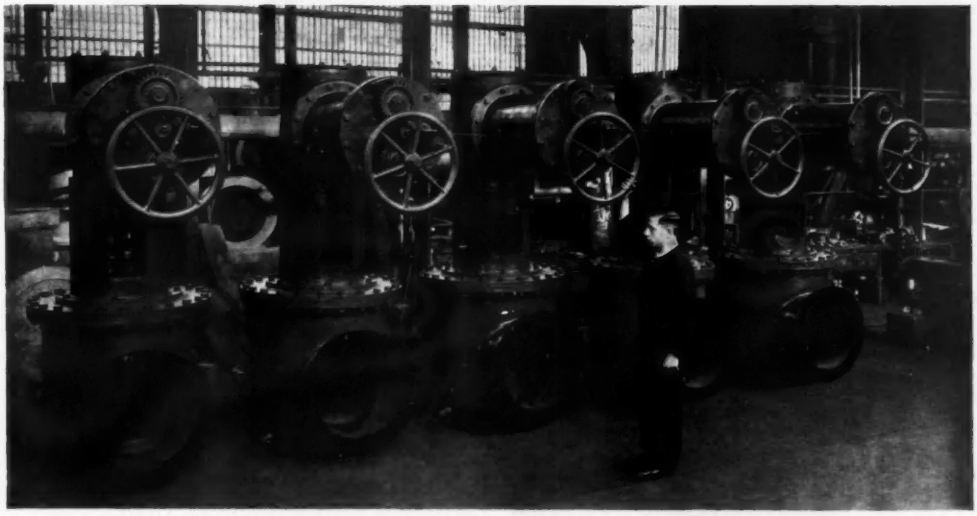

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Link Between Consumer and Board

Four Years of Consultative Council Work

ALDERMAN RICHARD TURNER, Chairman of the Eastern Gas Consultative Council, presented a review of the first four years' work at a meeting of the Council at the Connaught Rooms, London, on July 20. The Council's work, he said, falls under three headings—to consider representations made by consumers; to consider the Board's policy on tariffs, development schemes, and other matters affecting consumers; and to discuss and make suggestions on matters of broad public interest. Having summarised the Council's activities under these three headings, he dealt with the suggestions in the Fabian Society's report for making consultative councils more effective bodies, and finally with the shape of things to come, including references to the recommendations of the Ridley Committee. There might, he said, be some truth in the statement that 'the general public is ignorant of the structure of consultative councils, their functions and achievements,' but the Eastern Gas Consultative Council was fortunate in having a good press. Its meetings were well reported as there were usually some items of news, such as price of gas, building of new works, extension of supplies, the abolition of the penny-in-the-slot meter, and shortage of shillings for slot meters.

A report of a recent meeting in a provincial newspaper was headed in large type 'no change in the price of gas despite coal costing more' and gave 26 column inches, quoting verbatim from the report on the increased costs which the Board had to meet since the last price increase and a detailed review of the increases since vesting day. This showed that at four places served by the Board, the price had actually been reduced and that at 73 places out of the total of 95 served by the Board, the price since vesting date had advanced by no more than 33⅓%.

Price Increases

Shortly after vesting date the Board found it necessary to increase the price of gas at certain places, notably Peterborough, as estimates showed that the price being charged was not an economic one. It was reported to the Council at that time that the price of gas at several undertakings was under consideration some time before vesting date, but the decision had been reached not to make an increase owing to the imminence of nationalisation. As a result prices were advanced at 13 places varying from 1d. per therm at Bishop's Stortford to 3d. per therm at Peterborough. This sudden rise of 30% in the price of gas at Peterborough was the cause of serious complaints which led to the setting up of a special sub-committee, which after investigating the matter was able to give consumers the facts, which brought a satisfactory end to the opposition.

The first general increase was approved in July, 1950, when the Board was faced with increased costs equivalent to 0.96d. per therm if applied to all therms sold. The maximum increase which the Board proposed to make to any of the existing charges was 1d. per therm, or 5d. per 1,000 cu.ft. The Board at that time decided to fix a ceiling price of 9s. 2d. per 1,000 cu.ft., or 22d. per therm, and by making a general increase of 1d. per therm the fixing of the ceiling price meant that at 16 places served by the Board there would be small reductions in the price of gas.

Having reviewed the circumstances in which subsequent increases in the price of gas had been approved, Mr. Turner said complaints were received from a large number of industrial consumers regarding a new all-purposes non-domestic block rate tariff. At that time the concessions under that tariff terminated at 5,000 therms consumed in any quarter. The Council was of the opinion that this was unfair to the large industrialists whose consumptions were far in excess of this figure. The Board eventually decided to extend the block rate by four steps, the last being 'for all gas in excess of 50,000 therms consumed in any quarter.'

A Desire for Stability

The Council after the third general increase asked the Board if a period of stability of six months could be given. To this request the Board replied saying that it had decided to defer any further variations in gas prices until its July meeting subject to there being no substantial increase in costs during the intervening period. In July, 1952, a report was received from the Board that it did not contemplate at the present making any further increases in gas prices. It pointed out, however, that the Board's financial position was such as to necessitate immediate consideration of its revenue position should any appreciable increase in costs occur.

In March of this year the Board informed the Council that it was 'the Board's intention to hold the price of gas at its present level; it was striving for stabilisation of price by improved administration and reductions in production costs, but this latest increase in coal costs had changed the position so acutely that it would be extremely difficult to avoid a further increase in price, but if the Board were relieved of the present restrictions on the sale of appliances, the position would be considerably eased.'

The Council in the early days had imagined that nationalisation might mean a uniform price of gas, and some small local authorities had in fact written to ask the Council to press for this. The Board agreed as a long-term policy and it would appear that the linking of the small works to larger ones brought this measurably nearer. In addition, prices charged were getting nearer together, as was shown in a report presented to the Council on March 16, 1953. This could not have been done if the increased costs had been applied equally in every district. This unequal placing of the burden of increased costs had provided the Council with many problems and its advice with regard to the variation of tariffs was appreciated by the Board.

Limitation of the differential charge made to prepayment consumers was one of the earliest matters put before the Board which resulted in a considerable concession to this class of consumer. The matter was still before the Council.

Following consideration of a uniform price of gas throughout the area, the Council realised the difficulties of introducing this at present. It then advocated that a uniform basis of charge should be introduced for it realised that the terms and conditions of sale to large industrial and commercial consumers varied very considerably from place to place.

The Board decided in April, 1951, to replace the 446 tariffs which were in force at vesting date by a single all-purpose non-domestic block rate tariff. The Council was not satisfied that the concessions to the large industrial consumer under this new tariff were sufficient. Although it had always been anxious to see that the domestic consumer was not subsidising the industrial consumer, it felt strongly that the new tariff was unfair to the largest industrial consumer.

The Board gave further concessions by extending the blocks of the tariff and the Council had asked that at any future review of prices, further consideration should be given to the industrial tariff as it was aware that the high cost of gas had turned many industrialists to other forms of fuel.

Freedom of Choice

Electrical competition had been much discussed and this led the Council to advocate that freedom of choice should be given to tenants on new council housing estates. A special report on the subject was discussed in December, 1952. At that time it was realised that competition with electricity had become fierce, the reason being that when capital costs were incurred in extending supplies to new housing estates, it was essential that an adequate share of the business should be secured to make it profitable; this applied to gas as well as electricity. If the Gas Board failed to secure an adequate share of the business as a result of this fierce competition, it followed that the loss would have to be borne by the general body of consumers. Was the Consultative Council wise in pressing that freedom of choice be given to tenants of new housing estates, particularly in view of the shortage and high cost of cast-iron pipes? If the Board decided against extending its mains would the Minister favourably view all-electric estates in the light of the Ridley Committee's report? The Council felt that sooner or later a decision must be reached.

Were gas and electricity both to be made available to the domestic consumers? If so, then it must be laid down which fuel was to be used for which purpose if losses were to be avoided. It was not suggested that regulations were necessary to achieve this, but tariffs should be designed to that end.

Seeing that electricity had come to be regarded as essential for lighting and small power points, should the cooking, water heating and space heating be also done by electricity?

Some local authorities had decided to make 50% of their houses all-electric, the other 50% to be wired for electric lighting with gas for cooking. Could the Gas Board accept such an arrangement

on economic grounds? The Council viewed with alarm the attempts made by the Electricity Board to exclude gas from certain new housing estates. Electricity was being sold under the domestic tariff, which at certain times made gas appear to be more costly.

The Council had always felt the need of a national fuel policy; it therefore read the Ridley Committee's report with great interest. The Council had held the view that the most economical way is to carbonise coal at gasworks, thereby making available not only a supply of gas, but coke and hundreds of other things so necessary to the life of the country. The Council discussed the Ridley Report at great length. It was disappointed that the report was so indefinite, although it was glad to have its views confirmed by the National Coal Board and others who gave evidence. The time had come when efforts should be made to see that gas, electricity and solid fuel were each used for the purpose for which they were most efficient.

Fabian Society Report

Referring to the Fabian Society report on consultative councils and its suggestions for making them more effective, Mr. Turner said he thought it was true to say that the members of the Council and of the divisional committees welcomed the report, feeling that the present was a fitting time to take stock of the past four years' work and examine the conclusions and consider the suggestions made in the report.

The suggestion contained in the Fabian Society's report that committees should be reconstituted and that there should be joint committees to deal with all kinds of fuel was in his view the kernel of the whole report. This suggestion had been widely discussed by the Council and the divisional committees and the main points put forward were:

(1) No useful purpose would be served in making any change in the constitution at the present time and it was too early to criticise something which had been in operation for so short a time.

(2) To embrace all kinds of fuel in one committee would overburden the committee; the work would be too much.

(3) There was not sufficient work for the divisional committees to do at present and one member felt they were often a waste of time.

(4) The setting up of joint committees would be the end of competition and the Ridley Report stated 'competition between the gas and electricity industries should continue' (within an appropriate framework of tariffs).

(5) If the two industries, gas and electricity, were to continue in competition then it followed there must be separate committees to deal with them.

(6) It must be realised eventually that gas and electricity must be treated as one problem. The setting up of joint committees would lead to the elimination of waste in capital expenditure.

Shape of Things to Come

It was now over four years since gas and electricity passed to single ownership, but no change in the relationship between them had taken place. Each was waiting to launch intensive sales campaigns: each complained of the ban on promotional advertising. The nation's problem was to conserve coal and not to show how much more gas and electricity could be used. At present the two industries were dependent on more being used, for each had to balance its revenue—'taking one year with another.' Under the guise of having more economical appliances to offer, there was the desire to sell more gas and more electricity; this meant more coal. This was the pattern of private enterprise; it still applied equally to the nationalised gas and electricity boards. Could not nationalisation change all this as the fuel industry was one and under one ownership?

The Council complained that the Ridley Report gave no definite lead as to which fuel should be used for which purpose; this showed that each had an important job to perform. The report, however, made it abundantly clear that the position of our coal supplies was extremely grave and that we as a nation must do something about it and stop wasting it.

A yardstick was needed against which the efficiency of the national fuel producing industries could be measured; the yardstick should be the minimum quantity of coal which could be made adequate for the purpose to which it was applied.

Public request for joint meter readings was persistent. It was one of the earliest things discussed by the Consultative Council and had been kept alive by continued requests.

So far both industries had looked at it and could see no economy, pointing out that a saving of time of the meter reader might well be offset by loss in the accounting department if the regular flow of meter readings was interrupted. While competition between the two nationalised industries, gas and electricity, continued, it might be an unwise step to take. If competition were removed under a national fuel policy then joint meter reading would become possible and might be followed by a joint account for both gas and electricity consumed.

Royal Welsh Agricultural Show

THE Royal Welsh Agricultural Show was this year held on the Ponteanna Fields, Cardiff. The siting of the showground is almost in the centre of the city of Cardiff, near to Cardiff Castle. The Wales Gas Board's exhibit was made up of two large marquees situated at an angle to allow for a large open central area in which were arranged attractive cooker, hot water, and washing displays, the slogan 'By Gas it's Hot' being predominant. Two greenhouses supplied by a firm within the Board's area, and arranged for coke and gas firing respectively, were placed at the frontage of the central area and were filled with tomato and hothouse plants.

In one of the marquees a demonstration theatre was arranged in which the home service advisers of the undertakings in and around Cardiff were in attendance during the period of the show. Cookery demonstrations were carried out frequently each day. An attractive display of cookers, refrigerators, fires, etc., was placed around the demonstration theatre. The travelling showroom, operated by the South Wales undertakings, was adjacent to the demonstration theatre and was used as an enquiry bureau.

In the second marquee 'The Story of Flour' was portrayed in conjunction with Spillers, Ltd., of Cardiff. In this display the sequences of the various processes, from the milling of wheat to the various extractions from the processes, were illustrated by static models. To follow on 'The Story of Flour' and to illustrate where the gas industry plays a part in the life of the community, arrangements were made by which students of the bakery department of the Cardiff Technical College carried out baking demonstrations, these being done in a Collins baking oven. In the same marquee were some specimens of vegetables which had been grown within the Wales Gas Board's area, for which ammoniacal liquor had been used as a fertiliser. In conjunction with this latter display, photographs illustrating the application of ammoniacal liquor and sulphate of ammonia were exhibited.

To complete the layout an incubator and a chicken brooder were displayed. Day old chicks in the brooder were a never failing source of attraction to the public. Near the marquee was a range of equipment to cover hot water, central heating, steam raising, pasteurising, and sterilising applications necessary in the dairy and similar trades. The whole stand was tastefully decorated with flowers.

Arrangements were made with the authorities of the Royal Welsh Agricultural Society for a gas supply to be laid to the official caterers, and the Gas Board supplied large scale catering equipment on which all the main catering for visitors to the show was carried out, the necessary mains being laid by the Cardiff undertaking. The equipment used in the two main catering tents consisted of two Duke of York double oven ranges, six 30 gal. Mains vegetable boilers, eight 30 gal. Radiation vegetable boilers, a Radiation hot cupboard, a Ewarts Aquafont cafe boiler, and some 18 boilers each of 10 gal. capacity, were used in various places for the provision of additional hot water.

Among the visitors to the stand were Sir David Maxwell Fyfe, Q.C., M.P., Minister for Welsh Affairs, who was met by the President of the Royal Welsh Agricultural Show, Major C. G. Traherne, T.D., J.P., M.A., Lord Lieutenant of the County of Glamorgan, Sir C. Bryner Jones, C.B., Chairman of the Show Council, Mr. T. A. George, Secretary, Mr. R. W. Griffiths, High Sheriff of Montgomeryshire, Mr. T. Mervyn Jones, Chairman of the Wales Gas Board, Mr. R. S. Snelling, Deputy Chairman, and Sir William Jones, and Mr. J. C. Clay, Members of the Wales Gas Board.

British Standards Institution.—All B.S.I. departments will remove on August 8 to the new headquarters at British Standards House, 2, Park Street, London, W.1. Tel.: Mayfair 9000. Telegrams: Standards, Audley, London. It is expected that the departments and services will be in full operation from 9.30 a.m. on Monday, August 17.

Briquetting Plant for Scotland.—A new briquetting plant at the pithead of Brora coal mine, Sutherlandshire—said to be the oldest colliery in the British Commonwealth—is to be opened on October 1 by Mr. Thomas Johnston, Chairman of the North of Scotland Hydro-Electric Board. The plant is intended to serve the northern counties.

North Eastern First Aid Competition

DURING the last 12 months more than 140 employees have received instruction in the North Eastern Gas Board's first aid classes, and 120 have received certificates or other awards from the St. John Ambulance Association. Aware of the valuable service which can be rendered by employees trained in first aid, the Board was keen to sustain and develop the interest already shown, and early in the year it was decided to organise an area first aid competition, and invite teams from the various groups and districts to compete for a challenge shield provided by the Board.

Nine teams entered the competition which took place on July 15, at the Belgrave Youth Hall, Leeds. The tests, which were set and judged by Drs. Bean, Taylor, and Adams, consisted of team and individual events, and the whole constituted a thorough examination in the theory and practice of first aid.

The shield was won by the Leeds team with a total of 311 marks out of the 400 marks possible, a creditable performance on the part of the leader, Mr. T. F. Galley, of Yeadon and his team, H. Morgan, F. Neasham, F. C. Wilson, and E. Wood, of Leeds. The two Harrogate teams, who took second and third places, are also to be congratulated. The Chairman of the Board, Dr. R. S. Edwards, presented the challenge shield to the Leeds team leader, together with tankards to each member of the winning team and leather wallets to the runners-up. He paid tribute to the enthusiasm and keenness displayed by the members of each team and he appreciated that their efforts were due to a good deal of training and practice.

Mr. A. McDonald, member of the Board, after outlining the development of first aid in the area proposed a vote of thanks to all who had taken part, and had a special word for Mr. Johnson, Hon. Secretary of the Leeds Centre of the St. John Ambulance Association, who had played a large part not only in the success of the area competition, but in the class training as well.

The competition was attended by many of the group general managers, part-time members of the Board, and officials, including Mr. C. L. Davies, Industrial Relations Officer. The Competition served as the area eliminating competition for the forthcoming gas industry national first aid competition. The winning team will represent the board.

The Association of British Chemical Manufacturers announces that in consequence of the opening of the new Hyde Park telephone exchange its telephone numbers, formerly REGent 4126 and 1557, have been changed to HYDe Park 4126 and 1557. The change affects all the affiliated associations operated from 166, Piccadilly, W.1.

Cambridge Children's Summer Outing.—About 100 children of its members attended the annual summer outing organised by the Cambridge Gas Employees' Recreation Club on July 11. After a pleasant journey by motor coach, the party reached Wicksteed Park, Kettering, in time to sample some of its countless amusements before adjourning to the pavilion for tea. Thus fortified the remainder of the time was spent indulging in more of the pleasures which this famous kiddies paradise offers.

Ennerdale (Cumberland) Rural Council has refused to receive a deputation from the Northern Gas Board to discuss the installation of gas, as well as electricity, in new council houses. A member of the council expressed resentment at a statement at a meeting of the Northern Gas Consultative Council that the matter should be taken to a higher level if Ennerdale Council did not agree to having gas installed. It was pointed out that the installation of gas as well as electricity would mean another increase in building costs.

The Purchasing Officers Association, which has over 3,000 members and students holding positions in industrial and public undertakings, has published a new list of members. The last list was issued in February, 1950, since when the membership has been increased by over 50% and the number of branches and groups raised from 25 to 41, including new branches in South Africa and Australia. The 122-page booklet includes details of the growth and activities, membership regulations, and examination syllabuses of the Association. A limited number of copies are available at 5s. each from the Secretary at Wardrobe Court, 146a, Queen Victoria Street, London, E.C.4.

The Ipswich Divisional Committee drew attention in its report to the last meeting of the Eastern Gas Consultative Council to a report that an identical cooker, costing £36 in the Eastern area could be bought for £30 in the North Thames area, and asked whether anything could be done to secure greater uniformity in prices of appliances at least in neighbouring areas.

Long Service Certificates were recently presented to three Peterborough employees of the Eastern Gas Board by Mr. J. Hunter Rioch, General Manager of the Cambridge Division. Mr. A. Bright received a final certificate of service and Mr. H. Stockdale and Mr. L. Reedman received their 25-year certificates. Mr. Hunter Rioch said Mr. Bright joined the former Peterborough Gas Company in 1927 as a horse driver. Mr. Stockdale began in 1928 and was promoted to shift foreman. Mr. Reedman joined as a boy in 1927. He entered the fittings department and became a first class fitter, and was now in charge of the Whittlesey works.

Foundry Coke Merchants.—At the annual general meeting of the Foundry Coke Merchants' Association, it was announced that Mr. Arnold Carr (Thos. W. Ward, Ltd.), who has been Chairman of the Association, felt that he should retire from that position. Mr. R. J. McDonald (McDonald, Muter & Co., Ltd.), who was elected Chairman in his place, thanked Mr. Carr for his services, particularly during the difficult war years. He also appealed to all who were engaged in marketing foundry coke to join the Association. Mr. Carr was elected Vice-Chairman and the other officers and members of the Committee were re-elected. At the luncheon which preceded the meeting, Mr. H. H. Prosser, of the National Coal Board, who responded to the toast of the guests, stressed the friendly relations between his Department and the distributors. It was announced that the Association's annual dinner will be held at the May Fair Hotel, London, W.1, in February of next year.

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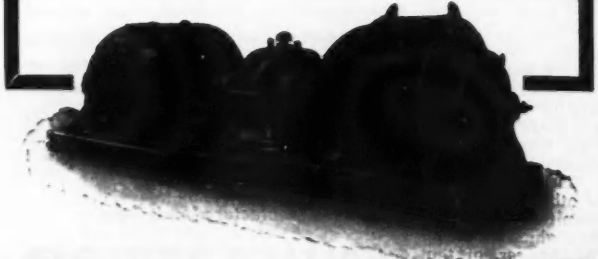

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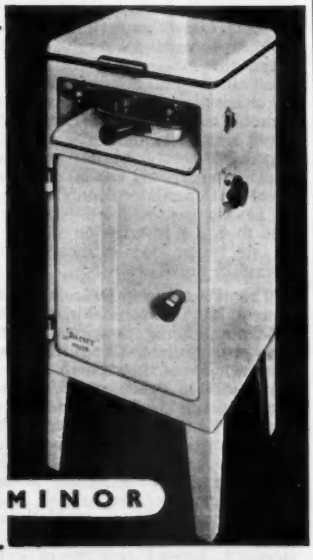

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The " Gas Journal " is published every Wednesday, price **1/3d.**; by post **1/5d.**

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Classified Advertisements: All small classified advertisements are charged at **1/9** per line (approx. **7** words)—minimum charge **10/6.** A Box Number address occupies **2** lines, and a further **6d.** is charged towards cost of postage on replies. Copy must be received by first post on Monday to ensure insertion in that week's Journal.

Displayed Advertisements: Rates obtainable on application to the Business Manager. Change of copy for displayed spaces must be received **14** days prior to publication if proofs are required. Type area of inside pages **10"** deep × **7"** wide; block screen **120.**

BUSINESS MANAGER: S. T. CULLEN

MIDLANDS OFFICE: 10, Union Street, Birmingham.

NORTHERN MANAGER: W. Q. Foster, 33, St. Helens Road, Harrogate. *'Phone:* Harrogate 84291.

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WHICH COLOUR
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Red, blue or black ? Distinctive colours for different fire risks prevent costly errors. Are your extinguishers the right colours ? Write, or phone Elland 2852, for free advice.

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THE COOKER CLEANER

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For resale to the public, and in bulk for Works use.

BALE & CHURCH, LTD.
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For pumping water or other liquids.
Send for List:—
GREEN & BOULDING, LTD.
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OXIDE

DUTCH AND DANISH BOG ORE
SPECIALLY ACTIVATED OXIDE OF IRON

Oxide supplied on loan or sale outright.
Highest prices paid for Spent Oxide.

Send your enquiries to

GAS PURIFICATION & CHEMICAL COMPANY LIMITED
ESTABLISHED 1873
PALMERSTON HOUSE, OLD BROAD STREET, LONDON, E.C.2.

Telegrams: "Purification, Stock, London." Telephone: London Wall 5077

APPOINTMENTS VACANT

The engagement of persons answering these advertisements must be made through a Local Office of the Ministry of Labour or a Scheduled Employment Agency if the applicant is a man aged 18–64 inclusive or a woman aged 18–59 inclusive unless he or she, or the employment, is excepted from the provisions of the Notification of Vacancies Order, 1952.

EXPERIENCED DESIGNER required for Projects Drawing Office, age 25/30, with at least H.N.C. and a sound background in design of plant for gas purification and for the Chemical Industries. The position is one of interest and affords an excellent opportunity for a young designer to expand his experience. Permanent position with excellent working conditions, pension scheme from age 30, and canteen facilities is offered to suitable applicant. Salary in accordance with experience and qualifications. Details of education, qualifications and experience to The Secretary, Whessoe Limited, Darlington.

APPLICATIONS are invited from qualified ENGINEERS having experience in modern machine shop practice including presswork and the assembly of medium sized clockwork mechanisms. The post involves supervision of production units and offers to a suitable candidate prospects of a progressive staff position. Knowledge of sheet metal work and ability to control labour would be advantageous.

Applicant apart from practical experience should have had a sound science or technical training preferably to degree standard and should be about 35 years of age.

Salary dependent upon qualifications but not less than £900 per annum.

Replies will be treated in strict confidence and addressed to: No. 159, *Gas Journal*, 11, Bolt Court, Fleet Street, London, E.C.4, furnishing full details of applicant's training, technical qualifications and industrial experience.

NORTHERN GAS BOARD

STOCKTON DIVISION
TECHNICAL ASSISTANT—CARBONISATION

APPLICATIONS are invited for the above position with the Stockton-on-Tees Undertaking. Duties will consist mainly of the supervision of a new 4 million per day Vertical Retort Installation and existing Horizontal Carbonising Plant. Experience with vertical retorts, preferably of West's construction, is essential.

Salary within the range of Grade IX (£615/715) of the National Salary Scales.

The post is pensionable and the successful candidate will be required to pass a medical examination.

Applications stating age, qualifications and experience, together with the names of two referees, should reach the undersigned not later than Tuesday, August 11, 1953.

F. L. SCAIFE,
Divisional General Manager.

Gas Works,
Thompson Street,
Stockton-on-Tees.

ENGINEER or outside REPRESENTATIVE required capable of supervising mainlaying contracts for progressive firm of Civil Engineering Contractors working in Southern England. Head office: South-West London outskirts. Write stating age, experience and salary required to: No. 158, *Gas Journal*, 11, Bolt Court, Fleet Street, London, E.C.4.

TWO FIRST CLASS GASFITTERS urgently required. Full J.I.C. rates of pay (Provincial 'A') and Conditions of Service. Newly built housing accommodation in the Corby New Town Development Area will be made available at appropriate weekly rental. Applications stating age and giving full details of qualifications and experience should be forwarded without delay to the Group Manager, East Midlands Gas Board, 40, High Street, Kettering.

NORTH WESTERN GAS BOARD

WIRRAL GROUP
TECHNICAL ASSISTANT

APPLICATIONS are invited for the above pensionable appointment at a salary within Grade A.P.T. VII (£545–£625 per annum).

In the first instance the appointment will be held at the Birkenhead Undertaking.

The person appointed will be fully responsible to the Station Engineer for all the process work associated with the ancillary plant, including the solid fuel fired boilers. Although this post is primarily concerned with equipment other than the gas making units, there will be opportunities for gaining additional experience on these plants, comprising continuous vertical retorts with modern C.W.G. Plants.

Detailed applications, giving the names of two referees, should reach the General Manager, North Western Gas Board (Wirral Group), Hind Street, Birkenhead, within 21 days.

NORTH WESTERN GAS BOARD, FYLDE GROUP, BLACKPOOL, require three FIRST CLASS GAS FITTERS. Applicants must hold the City and Guilds Full Technological Certificate in Gas Fitting. J.I.C. Schedule rates of pay.

Applications to be addressed to the Personnel Officer, Fylde Group, North Western Gas Board, Princess St., Blackpool, and received within fourteen days from the publication of this advertisement.

J. G. O. DRAKE,
General Manager

SOUTH WESTERN GAS BOARD

CHELTENHAM SUB-DIVISION
GLOUCESTER UNIT
HOME SERVICE ADVISER

APPLICATIONS are invited for the post of HOME SERVICE ADVISER at the Gloucester Unit.

Candidates should be in possession of a recognised Domestic Science Diploma and must be capable of conducting demonstrations and lectures in public and advising consumers on the use and care of gas appliances.

The appointment is graded A.P.T. IV—£244—£396 per annum.

The successful applicant will be required to pass a medical examination and to join the Board's Staff Pension Scheme unless she is otherwise ineligible in accordance with the rules of the scheme.

Applications, stating age, qualifications, present position, etc., together with the names of two referees, should be submitted to the undersigned within fourteen days of the appearance of this announcement.

A. L. MORRIS,
Manager.

North Street,
Cheltenham.

EXPERIENCED DESIGNER required fo· Pro
jects. Drawing Office, age 25/30, with at le
H.N.C. and a sound background in design of
welded oil storage tanks and all types of pressure ves
to the appropriate British and American Co des
practice. The position is one of interest and affo
an excellent opportunity for a young designer to exp
his experience. Permanent position with excell
working conditions, pension scheme from age 30, a
canteen facilities is offered to suitable applicant. Sala
in accordance with experience and qualifi
Details of education, qualifications and experience to
The Secretary, Whessoe Limited, Darlington.

EASTERN GAS BOARD

CAMBRIDGE DIVISION
TECHNICAL ASSISTANT

APPLICATIONS are invited for the positio
TECHNICAL ASSISTANT at Cambridge I
Candidates should have experience in the te
control of vertical and horizontal retorts, carb
water gas plant and ancillary plant, and pos
Institution of Gas Engineers Higher Grade Certific
in Gas Engineering (Manufacture).

The salary will be in accordance with A.P.T. Gra
VI (Provincial 'A') and the successful candidate
be required to pass a medical examination and
become a member of the Board's Pension Scheme.

Applications, giving details of training and experie
together with the names of two referees, should be
to the undersigned within fourteen days of the appea
of this advertisement.

J. HUNTER-RIOCH,
General Manager

52, Sidney Street,
Cambridge.
July 30, 1953.

APPOINTMENT WANTED

COKE OVEN MANAGER AND ENGINEE with Gas Works Superintendent experience, co
construction of all new plant, re-erection of all
plant, retort settings and ironwork, and maintena
(both electrical and mechanical). Vast worksh
experience of all manufacturing problems. Salary
of first importance. Age 47 years.—Box No. 1
Gas Journal, 11, Bolt Court, Fleet Street, Lond
E.C.4.

PLANT &c. FOR SALE & WANTE

THE EAST MIDLANDS GAS BOARD, Sheffi and Rotherham Division, have for disposal
following:

C.I. PURIFIERS, 3 boxes 40ft. 0in. × 40ft. 0in.
6ft. 0in., four covers to each box, 24in. gas connecti
with d.f. valves, ground level with surrounding pl
forms and two staircases.

Appointments for the inspection of the plant sho
be made with the Divisional Engineer (at the addr
below) from whom Tender Forms are also available

Tenders should be submitted to the undersig
not later than August 17, 1953.

CHAS. C. WOOD,
Divisional General Manager

Gas Offices,
Commercial Street,
Sheffield, 1.

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OLD GAS STREET LAMP CONTROLLE I buy old street lamp controllers no matter h
old or how many.

Send a sample now to:—

J. Donohoe,
6, George Street, North Shields, Northumberland
My offer by return post.

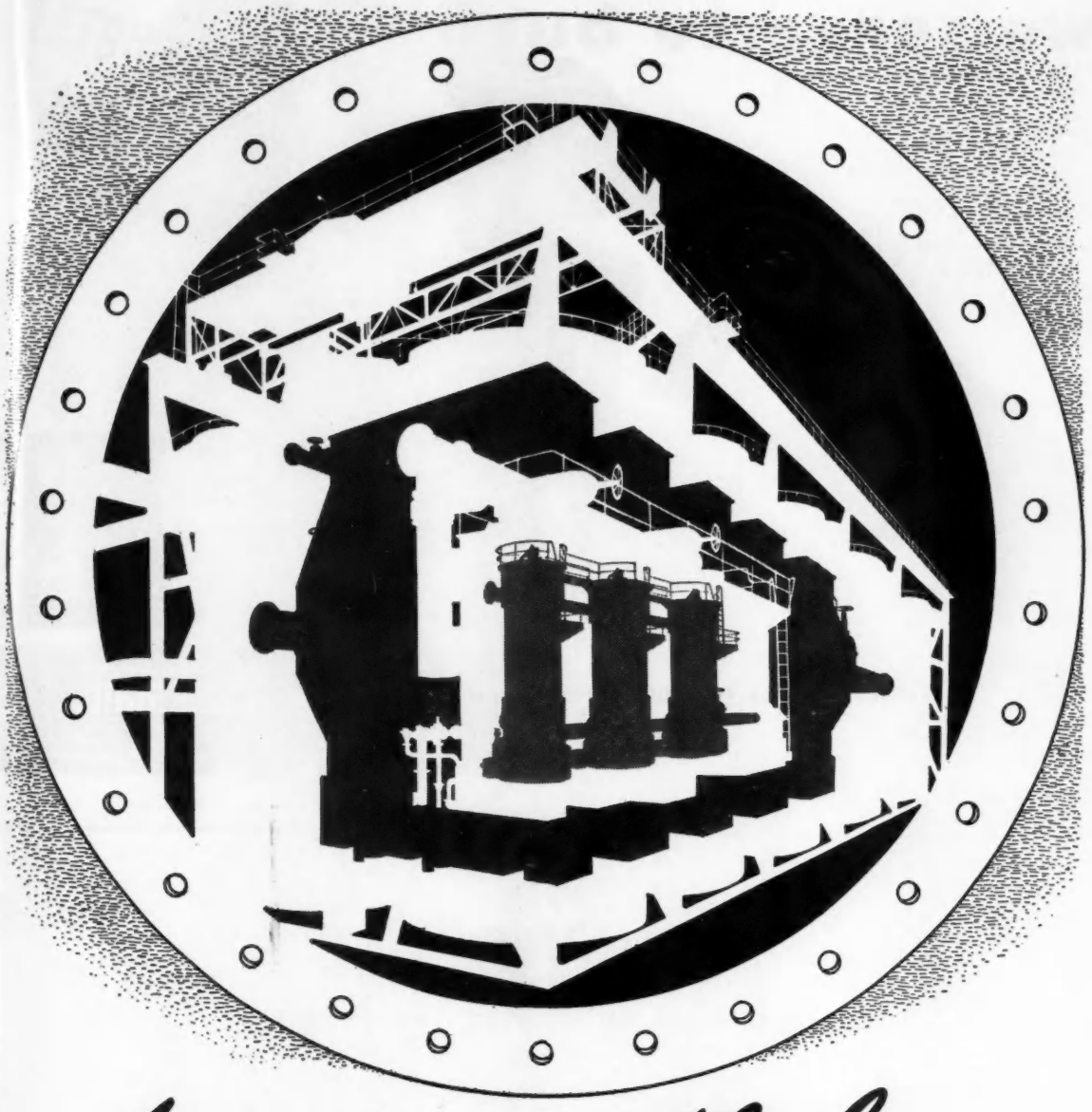
SCRAP GAS METERS WANTED

Top prices paid—Collection arranged from anywhere in U.K.

Sell to those best suited to deal with them.

Sell to — MITCHAM SMELTERS LIMITED
Rometal Works, Red House Road,
Mitcham Road . . . CROYDON . . . Surrey.
Tel: THOrnton Heath 6101. (Private Branch Exchange).

Truck Loads to our own private siding, Beddington Lane, Southern Region.



A modern outlook —

The Holmes organization embraces within its circle the experience in design and construction necessary to keep in the forefront of development in gasworks practice. *Consultation is welcome.*

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HOLMES
HUDDERSFIELD

W. C. HOLMES & CO. LTD.

HUDDERSFIELD - LONDON - BIRMINGHAM

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we serve to burn

"Fishtail" type burner *with two-armed stamped pattern injector for heating liquid in tanks by submerged horizontal combustion tubes. For use with low pressure gas supplies.*
Size Range: *1", 1¼", 1½", 2" and 2½" outlets.*
Capacity Range: *45-280 cu. ft. of gas per hour.*

Note.—These four burner heads are for high pressure gas or low pressure gas and air blast.

Brass non-blow-off head types: *deal with 5 to 10 cu. ft. of gas per hour.*

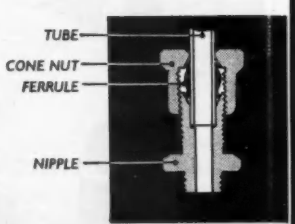
Stainless steel, "F" type head, burner: *deals with 8 cu. ft. of gas per hour.*

Perforated head type burner: *deals with 10 or 15 cu. ft. of gas per hour.*

Type 2 Mixture Controller, *for controlling quality of air/gas mixture irrespective of varying pressures and resistances. Temperature control is varied by manipulation of the air cock only.*
Capacity Range: *from 130 to 1380 cu. ft. of gas per hour according to air pressure (¼ lb. to 1lb.) and size. For low pressure gas systems.*
Air Inlets: *1", 1¼", 1½" and 2" diameters gas thread.*

DID YOU KNOW?

KEITH BLACKMAN have been making compression joints for many years and the present design embodies features developed as a result of this long experience. Notice that the shape of the ferrule is such that the joint is made without unduly stressing the tube.



INDUSTRIAL GAS EQUIPMENT

Keith Blackman LIMITED

MILL MEAD ROAD, TOTTENHAM, LONDON, N.17

"Phone: Tottenham 4123 (twelve lines) "Grams: "Keithblac, Norphone, London."

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Telegrams:
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Paisley Works, Swains Road,
Tooting Junction, S.W.17.

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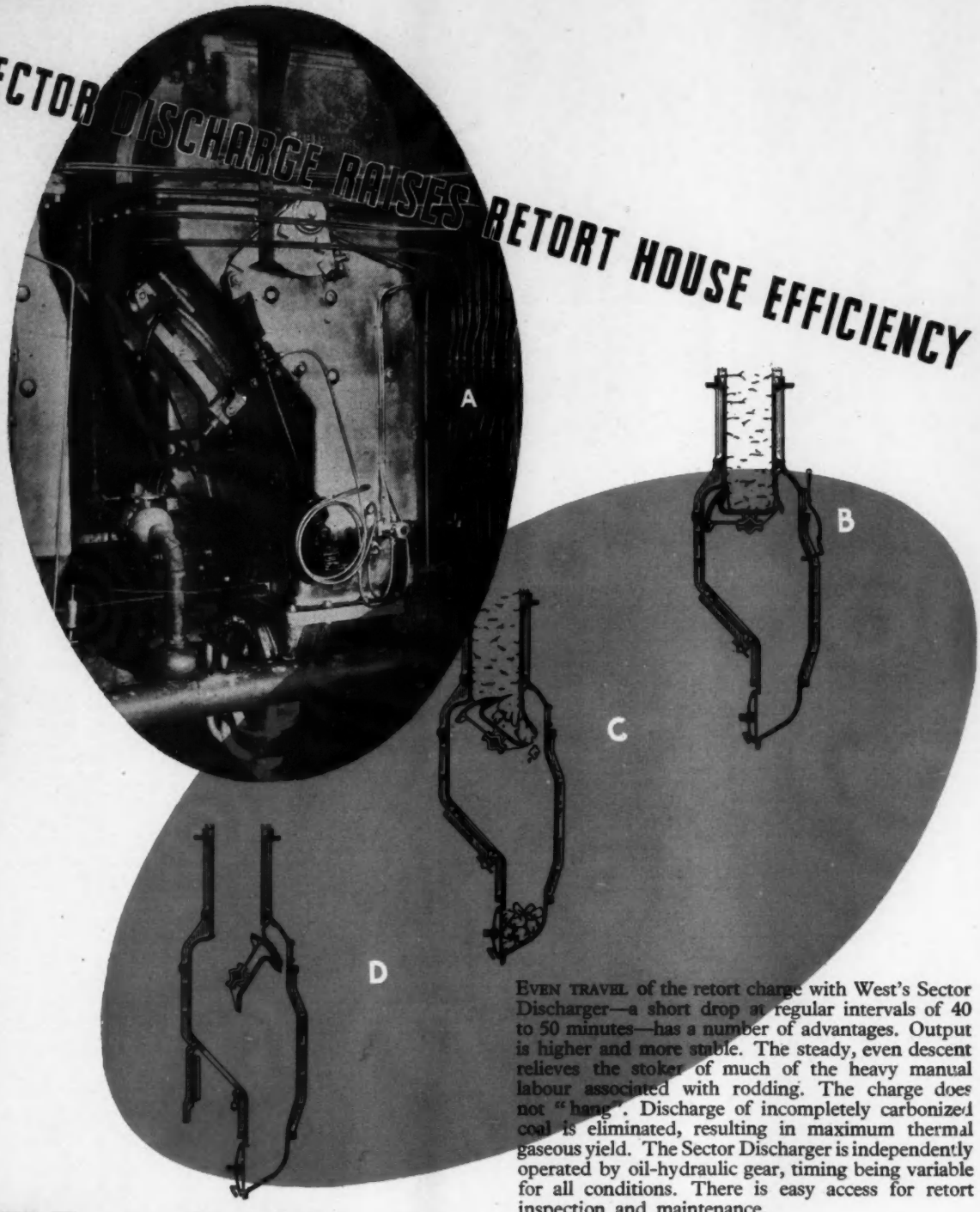
SECTOR DISCHARGE RAISES RETORT HOUSE EFFICIENCY



EVEN TRAVEL of the retort charge with West's Sector Discharger—a short drop at regular intervals of 40 to 50 minutes—has a number of advantages. Output is higher and more stable. The steady, even descent relieves the stoker of much of the heavy manual labour associated with rodding. The charge does not "hang". Discharge of incompletely carbonized coal is eliminated, resulting in maximum thermal gaseous yield. The Sector Discharger is independently operated by oil-hydraulic gear, timing being variable for all conditions. There is easy access for retort inspection and maintenance.

Illustrations: A. Exterior view showing oil-hydraulic drive. B. Discharger at rest. C. Operating. D. Access position for inspection of empty retort.

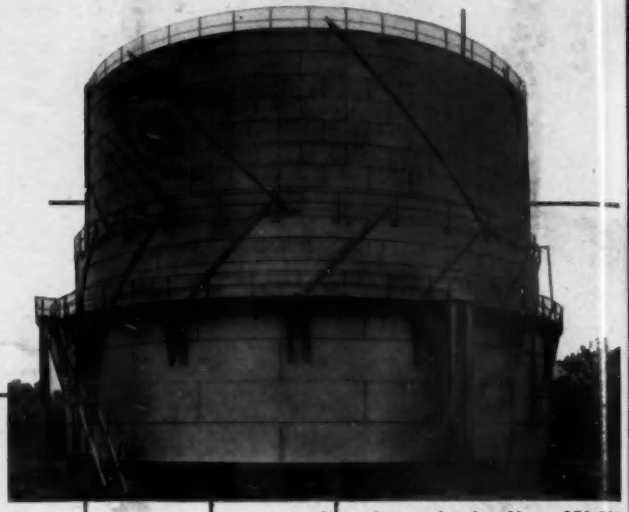
West's Gas
IMPROVEMENT CO. LTD.

ALBION IRONWORKS . MILES PLATTING . MANCHESTER 10

Telephone: COLlyhurst 2961 Telegrams: Stoker, Manchester

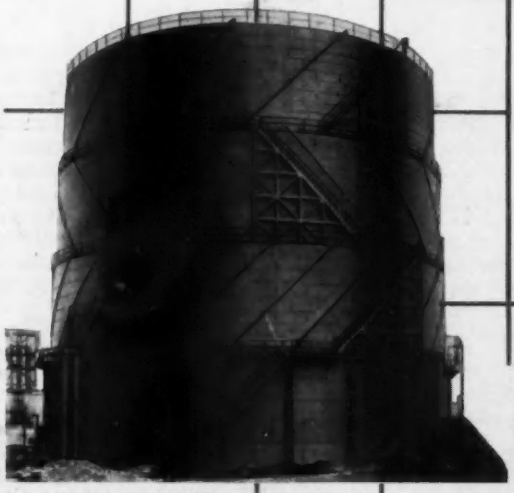
London Office: Columbia House, Aldwych, W.C.2 Phone: HOLborn 4108-9 Grams: Wesgasco, Estrand

CONTRACTS RECENTLY COMPLETED



Recently completed at Alton. 250,000 cu. ft. capacity 2-lift Spiral Guided Holder.

2 Million cu. ft. capacity 3-lift Spiral Guided Gasholder for the Scottish Gas Board at Alloa.



Spiral Gasholder of 1 Million cu. ft. Capacity recently completed at Scunthorpe.

Photographs by courtesy Southern, Scottish and East Midlands Gas Boards.

and

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by

NEWTON CHAMBERS

& CO. LTD. THORNCLIFFE, Nr. SHEFFIELD